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ALCOHOL:

ITS PLACE AND POWER.

W. Hall

ALCOHOL:

ITS PLACE AND POWER.

BY

JAMES MILLER, F.R.S.E., F.R.C.S.E.

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A NEW EDITION, REVISED AND ENLARGED.

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BODLEIANA BIBLIOTHECA

PREFACE.

A DESIRE on the part of the Directors of the Scottish Temperance League to publish an enlarged edition of this treatisé, enables me to make such alterations in the text, as the advance of physiological science requires. And these are not inconsiderable.

The theory of Liebig as to the combustion of alcohol in the lungs, seems about to be quietly consigned to the tomb of all the Capulets, at the instance of M. M. Lallemand, Perrin, and Duroy—French physicians and chemists—who have recently investigated the action of alcohol on the human system, as well as on that of the lower animals, with much care and intelligence, and whose ingenious observations all go to prove that alcohol undergoes no apparent change within the animal economy.

Alcohol, when taken into the stomach (where perhaps a very small portion may sometimes be converted into acetic acid), is speedily absorbed by the veins into the system; not to be equably diffused there, but to accumulate mainly in the brain and liver. After a time—sometimes extending to many hours—it is eliminated by the organs of excretion—the lungs, the skin, and especially the kidneys; not decomposed in

any degree, but simply given back, or rather thrust out by nature—as if with a protest that she found it altogether and absolutely impracticable.

"Naturam expellas furca, tamen usque recurret," says the proverb. But here is its converse. Nature expels an unwelcome intruder, vowing that is useless in her economy; yet man *will* thrust it back again, day after day!

"Nature is against you!" is one of the objections made to Nephalism by opponents. In reply, we appeal to Lallemand and his coadjutors. Nature is on our side. She cannot, indeed, prevent the intrusion; and, with much good nature and obligingness, no doubt, she does what she can to make the most of what is thrust upon her; but invariably her conclusion is, that the stuff cannot be worked up into any manner of profit; and her voice is plain—if men would but listen—"There! take back your alcohol; and, if you love me, pester me with no more in the future, unless, indeed, I let you know, by morbid signs—hoisting a flag of distress—that my organism, by reason of some passing disease, might be the better of a temporary stimulus."

In regard to articles of solid food, men are more teachable and wise. If any of these prove to be impregnable to the digestive and assimilating powers, and pass out as they came in, unchanged and un-

changeable, we take the hint, and banish them from our dietary; satisfied that, having been denied the appurtenance of a gizzard, things of like obduracy with stones and gravel can be of little use in our alimentary system. But not so with certain liquids. Provided these can tickle the nervous system for a little, they are made welcome, and consumed eagerly, as provocatives of pleasurable sensations, even although known to be physiologically unnatural, and pathologically unsafe—not only indigestible, and therefore burthensome, but also acting, more or less, with the influence of a poison, "for which there is no antidote known."

Even according to Liebig's theory of its intra-combustion, alcohol, taken as food or luxury, can be demonstrated an evil of no trivial kind. But the superseding that theory by the Frenchmen's simple and stern facts brings additional support and force to the principles and practice of Nephalism. Indeed, may we not venture to say that these in one particular resemble the Record of Revealed Truth—from which we trust that they emanate, and on which we desire that they depend—namely, that the further and more surely science advances, the more closely is this found to be in agreement with them?

How often have we been laughed to scorn for the "dogmatic assertion" that alcohol is not food! And

what trouble have some of our friends taken to show —if they could—that we were lamentably ignorant of the right meaning of that term!

We have borne the matter patiently; satisfied with the compensatory influences of a convinced intellect and a clear conscience. And now comes our further reward, in the "Conclusions" of the French philosophers, corroborated by other observers at home—the first of which "Conclusions" runs in these plain and pithy words—"L'alcool n'est pas un aliment."

May I be excused in acknowledging here—for it would seem ungrateful not to embrace the opportunity—the gracious acceptance which a kind public has been pleased to bestow upon the former issue of this little work? The extent of its circulation, and the multiplied assurances on all hands that it has been honoured to advance in some degree the cause of Temperance and Religion—particularly among the masses of my fellow-countrymen—is more than an abundant solace for all the opposition of many foes, as well as for (what is more hard to bear) the cold apathy of some half-hearted friends.

I am very grateful. The cause is not only good but growing. In the past there is much comfort; in the future, much hope. Let us "thank God, and take courage!"

JAS. MILLER.

ADVERTISEMENT.

A FEW years ago, the Directors of the Scottish Temperance League, anxious to have a Work of high authority on the Medical view of the Temperance question, made application to Professor Miller to prepare a treatise on the subject, who most cordially complied with their request. Such has been the popularity of the work, that during the comparatively brief period of three years and a half that have elapsed since its publication, no fewer than 33,000 copies have been put in circulation. Still further to extend its utility, and secure its permanence, the Directors re-issue the work in its present new and more handsome form. The value of this edition is greatly enhanced by the circumstance that the Professor has subjected the entire treatise to thorough revision, and has brought it down to the recent and highly important results brought to light by the experiments of M. Lallemand, and other Parisian authorities on the properties of Alcohol. The Directors have only further to acknowledge their continued obligations to Professor Miller for having gratuitously placed so valuable a work at their disposal, and to express the hope that, large as its circulation has already been, it may as yet be only on the threshold of its mission.

LEAGUE OFFICE, 108 HOPE STREET,
GLASGOW, 25*th June*, 1861.

CONTENTS.

	Page
INTRODUCTION,	9

ALCOHOL: ITS PLACE.

I.—As a Poison,	22
II.—As a Medicine,	45
III.—As Food,	68
IV.—As a Luxury,	91

ALCOHOL: ITS POWER.

I.—As a Poison,	107
II.—As a Medicine,	109
III.—As Food,	113
IV.—As a Condiment,	115
V.—As a Luxury,	116
VI.—As a Support in Labour of the Body,	122
VII.—As a Support in Labour of the Mind,	137
VIII.—As a Support in Enduring Cold,	151
IX.—As a Support in Enduring Heat,	161
X.—As a Means of Averting Disease,	171
XI.—As a Means of Producing Disease,	178
XII.—As a Means of Cherishing Age,	179
XIII.—As a Means of Prolonging Life,	184
XIV.—As Affecting the Mind,	186
XV.—As an Instrument of Vice,	190
XVI.—As a Special Opponent to Moral Reformation,	198
XVII.—In Clinging to its Victim,	199
Conclusion,	200
Appendix,	212

INDEX,	233

INTRODUCTION.

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DRUNKENNESS owns many a cause, and calls for many a cure. Many things are to be done, and many men are needed to do them. The principle of "division of labour" is fully recognized in this matter.

One of the most obvious causes of drunkenness consists in the strange drinking customs of the people. Strong drink not only forms a customary part of their ordinary diet, but whenever any peculiar occasion emerges—be it of grief or sorrow, business or pleasure—an additional amount of strong drink must forthwith be consumed, by all and sundry, if the entertainer would escape censure or contempt.

Sensible men have come to see that if drunkenness is to be stayed in its fearful sweep, carrying death and devastation in its track, these drinking customs must be greatly reformed; and means have accordingly been adopted to enlighten the public mind on the sad mixture of folly and evil which characterizes them. Good work has been done in this direction. Able authors have expounded the case plainly and power-

fully; and reference may be specially made to "The Physiology of Temperance and Total Abstinence" by Dr Carpenter, and "The Pathology of Drunkenness" by Dr Charles Wilson. Both of these treatises are excellent; telling and trustworthy. But a desire has been expressed for a more homely exposition of the matter, and one more readily accessible to the popular hand and mind. Another workman, accordingly, is needed for this particular department; and I have not felt at liberty to decline the call addressed to me. The whirl of many important avocations, the inevitable inroads on such snatches of leisure and relaxation as may be possible in such a life as mine, might have been pleaded as ground for a refusal. But perhaps such excuses are in most cases sufficiently met by the common proverb, "Where there's a will there's a way." And having a sincere and hearty "will" to help on the good cause of temperance, I have not sought the shelter of any such plea, but rather am content to find the "way."

Like apologetics might now be urged on you, gentle reader, deprecating your harsh criticism, and craving a generous forbearance in regard to a task hastily and imperfectly done. But even here I would be silent—satisfied that whatever failings may mar the attempt, the motives which led to it were honest, disinterested, and sincere. Throw aside prejudice—for a time,

sheathe your critical acumen—give me your patient attention, and, however much I may now and then unintentionally offend in minor points, I hope to convince you that three-fourths of the men and women of Scotland are ill-informed in this vital matter, and daily reaping most disastrous fruits of their ignorance, in both themselves and others.

A short preliminary statement must be made, giving a general idea of the more ordinary functions of the human body in health.

Every function of the living man—whether thinking by help of his brain, for example, or working by means of his muscles, or secreting through the agency of his glands, produces a corresponding disintegration of the appropriate structure; a certain amount of nervous, muscular, or secreting tissues crumbles down, and, for the time being, is rendered useless to the living economy; and, besides, its presence any longer —at least in that condition—would prove hurtful. A twofold action is required: first, to supply renewal for the waste; and second, to have the wasted material suitably removed. The latter object is accomplished by the blood, which, by the help of veins and absorbents, receives the used-up stuff into its backward or venous current, for the purpose of consuming part by the action of oxygen in the lungs, and disposing of

what remains by means of the organs of excretion—the liver, bowels, skin, and kidneys. The restorative supply of the waste from tear and wear, on the other hand, is performed by the arterial blood, in its onward current throughout the frame. Filtering through very minute and numerous vessels, called capillaries, it allows that portion of it which is needful to compensate for the ever-recurring loss to pass through, and come in contact with and be applied to the parts which need it. The waste is constant—greater according to the amount of exertion made, but always more or less; and the supply must not only be constant too, and proportional in amount, but also of a *certain quality*. Send venous blood to muscle, and you mar both its structure and its working. Do the like by the brain, and the result is similar; you disorder its function invariably, and may easily enough silence it for ever. To nourish, blood must be arterial. Having nourished, it becomes venous—not only useless, but noxious to the organs that need nourishment, and fit only to be sent back through the liver and lungs, there to undergo such changes of giving and taking as shall once more qualify it for its work of supply. In this backward course, as already said, it receives and is mingled with the used-up material, for whose loss its next wave has to compensate. And whatever tends to send on this doubly defiled current over the whole body, with an

imperfect performance of the purifying process—technically called *depuration*—must inevitably cause most serious interference with health and longevity.

But the blood is not a mere circling fluid, "self-contained." In every circuit it makes, it loses largely, in both quality and quantity; and *its* loss must be made up. This is done through the stomach. Food is taken in there, masticated, softened, and mixed up, so as to be in a state of suspension and solution. The gastric juice—or peculiar secretion of the stomach—mingles with it; and the *digestion* is carried on, as if in a stew-pan. Having become a pulpy fluid, called *chyme*, the food moves slowly into the alimentary canal; there it receives farther additions—bile from the liver, and juice from the pancreas or sweet-bread; the nutritious portion, called *chyle*, is taken up by the absorbents, whose various tubes concentrate into one common duct; and this empties its contents into the venous returning blood, just before it begins its purifying circuit through the lungs. So the feeder is fed.

But some things—alcohol happens to be one, and the poison of asps another—are impatient of so round-about a journey; they must be to the blood at once. They will not wait to be digested; but, taken up as they are, by the veins of the stomach, are carried—little if at all changed—into the general venous circu-

lation, and do their work there, whatever it may be, with almost instantaneous rapidity.

What takes place ordinarily in the lungs requires a little special consideration. The blood having suffered exhaustion and loss in its work of nourishing all the various parts of the body, having received a supply it greatly needed from the stomach and bowels, in the form of chyle—as a help, and having got also, what in some respects it might have seemed to have been better without, the used-up material refuse of life and working —as a temporary burthen,—it passes by the right side of the heart through the lungs; and in the cell-like ramifications of these, it is brought in all its motley mass into contact with the air, which for that purpose has been taken in by the wind-pipe. This air parts with its oxygen; a large proportion of which unites with carbon and hydrogen in the blood, carbonic acid and watery vapour being extricated in consequence. This important change, chemically called *oxidation*, is really a *burning*. Though not accompanied by light or flame, it is, like ordinary combustion, productive of heat; and, in consequence, it will be readily understood that the process of respiration, when duly performed, fulfils two important objects—aërating the blood, and at the same time helping to maintain the due temperature of the body.

But what is it that is thus oxidized, or burnt, by the

breathed air? Two things. The used-up material of the structures, returned in the venous circulation, is either burnt off, or so modified as to be converted into the most suitable forms for final expulsion from the blood. The greater part is thrown off as carbonic acid and watery vapour, while the rest, imperfectly oxidated, moves on into the general circulation, to be dealt with exhaustively in the lungs on its next transit, or to be disposed of by the liver, bowels, skin, and kidneys. This treatment of the "waste" is essential, and must be done. But the doing of it is not enough, of itself, to maintain the general temperature. And so a portion of food, digested in the stomach, and received by the blood as chyle, is specially devoted to the process of burning too; that portion consisting of such articles of diet as contain no nitrogen—oil and sugar being special examples.

In other words, within this wondrous living factory of ours, the waste material is not only burned off—as farmers do "wrack" on the surface of their fields—there is besides a special heating apparatus constantly at work; and so, by the twofold process, the blood is purified of its hurtful matter, while the whole frame is maintained in its due heat. Let either part of this process flag, and evil must ensue. Burn off all the blood's impurity, yet have an insufficient supply of extra fuel from the stomach—the body must grow

cold.* Send an inordinate amount of peculiarly combustible† material from the stomach, so that *it* shall do almost all the burning—then the blood's impurity cannot be sufficiently consumed; venous blood will come to circulate more or less, instead of arterial; and the most serious consequences cannot fail to happen. The kidneys, and skin, and liver, will make great exertions, no doubt, as excretory organs—to

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* It is not alleged that the whole of the heating process is done *in* the lungs. On the contrary, there is good reason to suppose (as will immediately be stated) that every act of nutrition and disintegration of tissue throughout the body—every change from fluid to solid and from solid to fluid—is accompanied with disengagement of caloric. But obviously while much of the "oxidation" is done *in* the lungs, almost all the oxygen enters *by* the lungs, whereby the "oxidation," or burning, is performed.

† Irrespective of any alleged combustibility of alcohol—which recent observations have rendered more than doubtful—Prout and others have experimentally ascertained that less carbonic acid than usual is evoked during the presence of alcohol in the blood, and that such blood is decidedly darker than in persons untainted by the "poison." It would almost seem as if alcohol, circulating in the blood, suspended, to a considerable extent, for the time, the chemico-vital processes proper to the fluid in its normal state. Thus the oxidation of the phosphorus of waste tissue is sometimes so interrupted by alcohol, that the body of the drunkard smells of phosphorus, his breath presents a visible phosphorescence, and his urine is luminous in the dark. Unhappily, as will afterwards be seen, this is the only luminosity which alcohol imparts to the debauchee.

throw out the evil thus forced through the system: but they will not wholly succeed; and they themselves will suffer injury in the strain. The blood will remain impure, important organs of the body will be thrown into a state of disorder, and disease of a serious kind may be established.

But the whole of the oxygen taken in by the lungs is not thus accounted for. About a fourth passes into the system, with the blood, without being spent at all on oxidation of the "waste." This portion of the oxygen cannot well be traced in its course; but there is good reason to believe that it acts an important part in the change of the nutritious part of the arterial blood into living tissue—supplying renewal for the "waste;" and that it is again active in the crumbling down of that tissue—constituting the "waste;" in both actions evolving caloric. And so here is a third way of maintaining the general temperature.

A word as to the action of poisons. Applied to a part, poisons have various effects. Some, like potass, acids, and other caustics, destroy all structure; others, like alcohol and ammonia, irritate and inflame; others, as prussic acid, impress mainly the nerves.

The constitutional effect is also various. The poison, more or less rapidly absorbed into the blood, might be circulated equably over the whole system.

According to a strange law, however, such diffusion does not occur; but, on the contrary, certain poisons seek out certain parts, and act on them primarily and chiefly—drawn thither by a vital, as if by a chemical attraction. Tobacco, digitalis, and the upas poison, for example, act specially upon the heart; arsenic affects the bowels, and mucous membranes in general; cantharides, the kidneys; iodine, the glands; strychnia, the spinal cord; alcohol, opium, and all narcotics, the brain.

Some kill directly and at once; others more remotely, by the induction of secondary disease.

Some exert definite effects, dose by dose; others produce their special results only after frequent and continued repetition.

Some produce continuous results; others, as the malaria, afford intervals of apparent immunity.

ALCOHOL: ITS PLACE.

—o—

"LET everything have a place, and everything be in its place." This is a good old Scottish maxim, pregnant with both thrift and wisdom. And had it but its full sway over the common household thing whose ominous name heads the page, the world were many times fairer, richer, and better, than it is this day.

But in order to put and keep anything in its proper place, we must ascertain and determine what that place is. And, accordingly, let us at once proceed to make some inquiry in this direction, so far as alcohol is concerned.

Under the term "alcohol," is included, let it be distinctly understood, every kind of intoxicating drink. All the varieties of spirits, wines, and malt liquors, are the same as to their intoxicating quality; that invariably depends upon the presence of alcohol. This may be more or less diluted, mixed, coloured, and flavoured; or, as in the case of malt liquors, combined with a

small quantity of nutritive material;* but it is always present, and according to its amount is the intoxicating power of the beverage. A man is apt to draw a broad distinction—greatly in his own favour—between himself drinking beer and another drinking brandy, as a daily habit; but the truth is, that both are drinking the same thing, only in different guise and dilution; chemically and practically, there is much the same difference as there is between one who drinks spirits "neat," and another who drinks his allowance of the same thing well "watered." The one drinks alcohol slightly diluted—brandy; the other drinks alcohol much diluted, and somewhat modified by flavour—beer; but both are drinking alcohol. Not a day passes but you may hear, "I am no drinker; for years I have never touched spirits; I take nothing but wine." The man who so expresses himself may be in the habit of taking his pint of sherry, or quart of claret, daily, or all but daily; and, while honestly convinced that he is touching no "spirits," is really swallowing the same amount of alcohol as if he had taken a glass or two of

* Very small in the best of them, especially if you exclude the saccharine stuffs. For, according to Liebig, suppose a man to consume, daily, eight or ten quarts of "the best Bavarian beer," he will obtain from it, in the course of twelve months, no more than the same quantity of nutritive constituents contained in a five-pound loaf of bread.

raw brandy or whisky instead. He believes that spirits are injurious; he would not take *them* for the world; yet all the while he *is* taking the spirit; and surely it is of great importance that he should be undeceived. Let it be well understood then, at starting, that all intoxicating beverages contain alcohol, as their characteristic and essential ingredient; and however they may vary in taste or appearance, their chemical constitution as intoxicants is practically the same. Beer, no doubt, is less hurtful than brandy—wine less dangerous than whisky; but chiefly because they contain less alcohol.

And what is this alcohol? Whether pure or diluted, where should it stand in the arrangement of things? As a poison? As a medicine? An article of food, or of luxury? In a household we can readily imagine —say in a hotel—a long list of articles of diet fit and offered for use; a medicine chest, too, with a carefully arranged catalogue of its contents; and hung up in some conspicuous spot, for readiness of access in emergencies, perhaps a tabular list of the most common poisons, with short and simple rules for their counteraction. Into which of these lists ought alcohol to go? The question is not, How do men generally consider it, and in what category is it placed? That were easily answered — though somewhat unsatisfactorily. Most men call it *food*, and use it daily as such,

in some form or other. Others esteem it a luxury; and their use of it accordingly is but occasional. A few regard it medicinally, yet fit for daily use, and are ready to give it a high character as an assuager of the ills of life—all but a panacea. Few, very few, ever dream of regarding it as a poison.

Let us see how the truth lies. Can it be that men are using as an article of food, daily and freely, what is essentially a poison? In cooking, were an appreciable amount of verdigris from the pot or pan to be mingled with their stews and boils; in their tea and coffee, were the water to contain a grave proportion of lead from the pipe or cistern; in the flavouring of the sweet course, were the ratafia to give out a decided quantity of prussic acid,—the effects would tell, inquiry would be made, and the contamination would be avoided. And can it be that men are daily mingling with their food, in no niggard amount, what is as truly poisonous as the prussic acid, copper, or lead—making little note of its evil effects, and taking no means to remove the adulteration? Let us see.

ALCOHOL AS A POISON.

ALCOHOL *is* a poison. In chemistry and physiology, *this is its proper place.*

Many readers may receive this dogmatic assertion

with a "Pooh, pooh"—"Fanaticism and folly"—"We know better." Let me support the assertion, therefore, by authority. "The sedative action of alcohol on the brain," says Christison—and we know no higher authority, either as regards poisons or the articles of the materia medica—"constitutes it *a powerful narcotic poison.* For its effects as such, if rapidly brought on by a large dose, *there is no antidote known*—the only efficacious treatment consisting of speedy evacuation of the stomach, and the employment of brisk external stimuli."

Now let us inquire as to the effects of this formidable agent. Obviously, they will vary according to the age and condition of the recipient, and especially according to the manner and amount of the administration.

I. Alcohol absolutely pure is seldom if ever taken internally. To make it at all tolerable to the stomach, it must be diluted; and the strongest brandy, whisky, or other "spirit," contains a large proportion of water —thirty, forty, or fifty per cent.

But though thus modified, a large quantity in the adult, or a small quantity in the child, may prove rapidly fatal. It is almost at once absorbed by the veins of the stomach, and mixing with the blood is carried to all parts of the body, affecting certain of these very specially—namely, the nervous

centres.* These are paralysed; respiration stops, so does the heart's action, and life ceases. A man quaffs a quart of brandy almost at a draught, tumbles down, and dies on the spot. The shock of the large dose of alcohol on his nervous system, with which it is almost immediately brought into direct contact through absorption into the blood, acts like a blow on the head, or a kick on the stomach. Prussic acid is not more deadly.

To obtain some idea of the rapidity with which alcohol dashes through every obstacle to reach the brain—the material organ of reason, and a special object of the poison when once it gains access to the body—consider the following experiment of Dr Percy:—He injected about two ounces and a half of alcohol into the stomach of a dog, and the animal dropped dead almost instantaneously. As soon thereafter as he could remove the brain—an operation which occupied only a few minutes—and place it in an apparatus for distillation, he by that process extracted from it a notable quantity of the alcohol—more than from an equal weight of any other part of the body, or of the blood itself.

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* How often do we hear a man say, "I can't drink spirits, or even wine; *it goes to my head.* I find it instantly go to my head." The words are right, literally, as well as metaphorically, though the speaker thinks, perhaps, only of the latter sense.

II. But the dose may not be such as to kill at once by shock. The bottle, we shall suppose, is consumed more leisurely, and by and by the man is found in a state closely resembling apoplexy—with suffused face, labouring pulse, heavy, noisy breathing, and total insensibility. What has happened? The alcohol absorbed has reached the nervous centres as before, and has all but paralysed their functions; in consequence, the heart and lungs are both acting most imperfectly; the blood is failing to receive its due proportion of oxygen in its oozy passage through the lungs, and is, besides, directly altered for the worse by the alcohol's actual presence in it. The man is choking gradually, as if with a rope round his neck, or a clot of blood in his brain. The hand of alcohol is on his throat; breathing becomes slower and slower, the heart beats more and more faintly, the body grows cold, and in no long time all is still in death.

Peculiar circumstances may render such an event possible under even a comparatively small dose. Ordinary "intoxication" may not have occurred, yet the alcohol may so injuriously determine to and act on the brain, as to cause congestive apoplexy, modified by symptoms of poisoning. And under this, life may give way, as in the following case:—A gentleman supped out, drank several tumblers of toddy, came home, went to bed. In the morning he was found insensible.

A physician, hurriedly called, at once recognized the symptoms as those of narcotic poisoning, and treated the patient accordingly. Reaction began, but failed, and death occurred within a few hours. On dissection, no organic lesion or other cause of death could be detected. The contents of the stomach were carefully secured, and made over to the care of a skilful chemist. Morphia was suspected, but nothing could be found—save alcohol.

III. In the first class of cases death is as by *shock;* in the second by *coma;* and examples of both are by no means rare. There is a third class, however, far more numerous. The man is stronger, the dose is less, or more slowly taken; and, after a heavy stupor—far more deep and dangerous than ordinary sleep—the drunkard slowly evinces signs of returning consciousness. He has been "dead drunk," and all but dead actually. The choking was begun and going on as before; but, fortunately, the poisoning "took a turn," and the poison itself having been more or less rapidly thrown out of the system by the organs of excretion, the brain lightens, and the conditions of life are restored. Gradually the man returns to something like his wonted self, but retaining many a plain trace of his narrow escape. He was all but poisoned. What did it? Alcohol. Had he died, you might have found, on dissection, in him as well as in

each of the former victims, the alcohol unchanged, not only in the general mass of blood, but specially in the substance of the brain—a texture for which it has a peculiar affinity.

These are examples of plain *poisoning*—a common word, which carries an alarming sound; but put it into a classical shape, and, strangely, it seems much less formidable. "Was he *poisoned?*" "Oh no; only *intoxicated.*" And yet, literally, the words mean the same thing.

IV. *Intoxication!* We need not describe what every one has seen, and not a few have felt. Let us, however, trace the action of the agent in this too common variety of alcohol's effects. Reaching the brain, more gradually and in smaller quantities than in the previous examples, the alcohol acts as a stimulant at first. The intellectual functions are excited, as shown by gaiety, talkativeness, animated expression, play of fancy, and increased rapidity as well as variety of thought. But the paramount function of *voluntary control*—the great distinguishing characteristic of the human mind—is already affected otherwise than by increase or exaltation. While imagination is specially excited, the will, almost from the first, is sensibly impaired. The mind suffers in its best part, through even slight tampering thus with the material organ wherewith it is connected.

The heart is roused, and beats quicker; the general circulation is hastened, and the whole frame feels warmer, stronger, and better.

As the dose is continued, its effects are not only observed in the functions of the anterior and upper parts of the brain—its intellectual portion—but extend to the deeper and posterior parts, connected with special sense and muscular power. Sight and hearing are affected, the limbs grow weak and tottering, the head swims, the tongue refuses distinct articulation. At the same time, intellectual excitement becomes more and more decidedly intellectual perversion, partaking of the nature of delirium; reason is at a discount, and voluntary control placed more and more in abeyance. What is specially human is lessened, what is merely animal is intensified; the passions rise rebelliously, and defy all moral control; and the man becomes, under his own act, what the law has quaintly termed him, "*voluntarius demon.*" He is temporarily *insane*, and fitted for any act of violence to himself or others.

But as the poisoning material filters on into the frame, its effects advance still farther. All semblance of stimulation, in any part or way, is over now. Intellect is all but departed; and muscular power, as well as the special senses, are gone or going too. Besides involvement of the whole brain, the upper part of the

spinal cord is suffering; and, in consequence, the heart is weakened, the pulse is labouring, the respiration is oppressed; the face that a while ago was pale and haggard, is growing swollen and livid; and unless a halt is called now, matters will speedily arrive at the condition of No. III.—life in peril by coma.

The best that can happen is a heavy death-like sleep of long duration, with an awakening to fever of body and misery of mind.

Certain advocates of alcohol talk in a somewhat odd fashion of such an event happening "occasionally." They admit that intoxication is wrong, in every sense; but they protest that its "occasional" occurrence ought not, in all fairness, to shut out the man's drinking from the claim of being reckoned compatible with "moderation." And taking this for granted, they then go on to speak complacently of how it is to be atoned for, thus:—"which excess he sleeps off that night—or pays for by a headache next morning, and hears no more of it." Indeed! He has a heavy sleep, no doubt; but he does not "sleep *all off;*" something remains. He pays a heavy bill in the morning too; that is certain. But can he show a discharge in full? No, no. His creditor is not so easily satisfied. The headache is only a sum in hand; one instalment of the price of the pleasure. There are other payments

to be made by and by. "He hears more of it," to his cost; as will duly appear in the sequel.

V. Lead, given in small but frequently repeated doses, (considerably short of perilling life at once by poisoning) ultimately paralyses the muscular system; arsenic, similarly used, produces serious consequences upon the mucous membranes; and alcohol, in a smaller dose than at any time to threaten a fatal poisoning, yet by frequent repetition may produce a most damaging result upon the entire nervous system —not undergoing such accumulation in substance within the body, as these other poisons do, but keeping up a constant, and consequently cumulative *action* on that part of the frame. This state has been called, "*alcoholismus chronicus*," or "chronic alcohol-poisoning." To borrow a phrase from farriery, it might be termed alcohol-*founder*.

The whole body trembles, but especially the hands, the limbs, and the tongue; eyesight and hearing are impaired; the skin is affected by various morbid sensations; the mind at best is weak, and often disordered; general debility increases; sleep is capricious, disturbed, and unrefreshing; strength, appetite, flesh, comfort, energy—all disappear; there is no relief, save what is both temporary and delusive—and that by continuance of the poison; the stomach rejects food, and puts forth foul secretions of its own; startings seize

the limbs; epilepsy may follow; and the man may die. Arsenic could not sap life more surely; and all may be done, be it remembered, without the victim having ever once been absolutely *drunk*—at least, in the ordinary acceptation of that word.

VI. This is sad work with the body. But the mind, too, is not without its danger and damage. In the course of the chronic poisoning just spoken of, or in the midst of a more active and acute debauch, the condition of "insanity" to which allusion has been made (page 28) may not prove temporary—that is, passing off with the other immediate effects of the drunkenness—but may be prolonged. The man, though become sober, is mad; and may remain so for some time. This madness—technically termed "*delirium ebriosum*"—is usually of an active and dangerous kind, and may entail much evil upon the victim by reason of violence done to himself or others. And, besides, it is liable to become permanent—changing its character, and settling down into confirmed mental disease.

VII. Or the mental affection may be of a different form still—what is termed "*delirium tremens*"—the body weak, the nerves unstrung, the mind a prey to all manner of rapidly shifting delusions, with suspicion and fear; violence to others improbable, but injury to self not unlikely. This may be the result of an

occasional bout of hard drinking, or may form a part of the "chronic poisoning." Ordinarily, it is connected with some aggravated excess in the habitually intemperate.

As a sample, take a case—in some respects curious. A gentleman of middle age, and active business habits, had for years been intemperate; and more than one attack of *delirium tremens* had imperilled his life. When first I saw him, he was in his shirt, hopping incessantly from chair to chair, in order to avoid myriads of snakes that were crawling on the carpet. Then the vision changed upon him, and he rushed about more violently to escape from men following him with sharp knives. Suddenly he leaped upon the bed, arranged his limbs quietly, and scarcely breathed. He told us he was dead, and read out an announcement of his sudden and unexpected decease, from the page of an imaginary *Courant*, concluding with, "Friends will please accept of this intimation." So he lay for some minutes, affording breathing-time to his attendants; but all of a sudden he rose, went into the sitting-room, and began to write with a trembling hand hastily at the table. He said that he had stupidly forgotten to add a codicil to his will, and was glad to find that it was not too late to supply the omission. Having written a tolerably coherent statement, to the effect that he died on such a date, and

that he begged his employers to support his son as his successor in business, he quietly returned to his bedroom; but no sooner did he cast his eye on the empty bed, than he broke forth in a most violent tirade against the attendants for having stolen his body. "Where is it? where is it? I left it lying there when I went into the parlour to write the codicil, and when my back was turned some scoundrel has taken it away. Bring it back instantly." And so he lapsed into excitement again. But, by and by, stupor came on, he lay quiet once more, and despite of all the help that we could give, the "died at Edinburgh" became a sad reality.

The man does not always die, however. He may recover many a time, drinking on and on; yet death in the paroxysm is not unfrequent; and, besides, this trembling delirium may pass away, only to be followed by steady insanity.

VIII. There is yet another evil—an occasional, nay, by no means unfrequent, evidence of alcoholic poisoning—"*Oinomania.*" For a time, the victim is well; sober, active, trustworthy. But of a sudden, a furious and fiendish impulse draws him helplessly to the bottle. He gulps down the contents rapidly, glass by glass, as if his only object were instant and complete intoxication; and once drunk, he will scarcely permit himself to grow sober again, till perhaps a week or

ten days have elapsed. Then he gradually gets hold of a lucid interval—to be rudely broken up once more, however, at no remote date. The craving is that of a madman, and all but absolutely irresistible. As one has himself said, in terrible words, "If a bottle of brandy stood at one end of the table, and the pit of hell yawned at the other, and I were convinced that I should be pushed in so soon as I took but one glass, I could not refrain."

This state is never of spontaneous origin, like many other forms of mental disorder, but is always preceded by intemperance. At the same time, it is most important to remember, that some constitutions are much more susceptible than others, requiring comparatively little previous indulgence in strong drink to produce the evil. For example, I was lately consulted regarding a lady who had become a frightful oinomaniac, and whose malady originated—or had been, as it were, suggested—by the habit of carrying strong spirits occasionally in the mouth for the cure of toothache. "Against her own better judgment and the voice of conscience, she is forced on," says my correspondent. "For days on end she has been out of one stupor into another. On two succeeding days of this week she has consumed a quart bottle of strong whisky. The next day, or rather night, when people were asleep, she got hold of some key which was supposed to

secure from her a bottle of spirits and another of wine, and within twenty-four hours these were also consumed, no one being able to snatch them from her."

Here I might stop and close the evidence, claiming a verdict against the Spirit of Wine as a poisoner. But there are minor counts in the indictment; and to make the case more complete, suffer me to state these very briefly.

The drinker, escaping or surviving the major results, is still liable to serious injury, and of various kinds.

1. Absorbed into the blood, unchanged, alcohol corrupts or poisons that important fluid. It becomes less coagulable—a state favourable to the occurrence of hemorrhages, and unfavourable to the arrest of loss of blood; besides, it assumes more or less of the venous character; holding far more than it ought of waste material, (or the residuum of metamorphosed tissue,) and so becoming "poisoned," in the ordinary language of the schools. It becomes more or less loaded with fat, too; particles of this, floating as brilliant points, being visible to the naked eye, even when but a moderate quantity of alcohol has been taken. Blood so changed is obviously unfit for the purposes of healthy nutrition.

Poison the blood, and you poison the whole man. And do we not find the drunkard soon showing plain signs of this?—ill nourished, flabby, weak, watery in his tissues, sodden and sad in colour. Sometimes he grows lean and lank; sometimes he gathers unhealthy fatness—the fat being put down in wrong places, and found where no fat should be. Internal accumulations of this redundancy oppress the vital organs; and the partial conversion of muscular and other tissues into fat, constitutes one of the most serious diseases to which mankind are exposed. With such degeneration of the heart, for example, our life is not worth an hour's purchase. We may at any moment fall down dead. And no single agent does half the work of alcohol in causing such degeneration.

2. Other heart-diseases, as well as aneurisms, and varicose veins, have also their origin, very frequently, in the free and sustained use of alcohol. The blood-vessels, irrespective of inherent changes in themselves by mal-nutrition, cannot with impunity bear a constant, unnatural, and inordinate stimulus, with a consequently hurried circulation.

3. Alcohol's special action on the brain and nervous system we have already noticed (page 24). The functional mischief is manifest; and there is good reason to believe that an injurious change takes place in the structure too. When an anatomist wishes to preserve

a brain or spinal cord, for the purpose of dissection, he places it in strong spirits; and it grows firm and hard in consequence. Why may not something of a like change take place during life, when the organ is from time to time—or, even constantly—steeped in alcohol, as in the case of the drunkard it cannot fail to be?* And is it wise to harden, or run the risk of hardening, a living brain? Will that benefit a living nerve, or nervous centre, which preserves it *when dead?*

Besides, with disordered blood, disordered circulation, and disordered brain, obviously this latter organ must be peculiarly liable to the occurrence of dangerous disease—such as inflammation, congestion, and hemorrhage. Every one knows how often thus the

* "Does —— drink freely?" "Oh yes—and stands it well. He is a *hard-headed fellow.*" What a depth of hidden meaning there is in many of the common phrases of life! Hard-headed? Yes; thick outside, and hard within. That the brain is really hardened, seems a fair conclusion from experiments of Liebig on the power of alcohol to displace the natural and healthy water-constituent of all animal tissues. Many tissues and organs of our bodies consist normally of from one-half to three-fourths of water; and when these are immersed in alcohol, more than half the water is displaced, owing to the capillary attraction of the tissues for alcohol and water being less than for water alone. Hence, doubtless, in part at least, the earthy precipitation so common in the blood-vessels of the intemperate—the water in their textures being too scanty to keep certain saline matters in solution.

drunkard is taken away. In other cases, a creeping palsy comes on. And epilepsy is one of the most frequent and formidable complications of habitual intemperance.

4. The stomach is, of course, primarily affected. On its lining membrane, the alcohol acts as a stimulant; and may at first produce little more effect, except when in excessive quantity and strength, than to excite as cayenne or ginger might do. But such simple action proves very temporary, under habitual repetitions of a liberal dose. Congestion and inflammation take the place of simple excitement. Instead of digestion being favoured and quickened, it is retarded and perverted—all the thousand and one evils of dyspepsia setting in; while by an acute inflammatory attack, danger to life may be at any time superadded.

After a time, the drunkard comes to have no stomach at all. As a digester, its occupation is gone. Food is rejected, and brought up along with foul, loathsome secretions from the diseased lining membrane. The skinned fiery lips, and sour water-brash of the drunkard, are proverbial. The organ ceases to be a concocter of chyme, and degenerates into a kind of sponge through which the alcohol filters into the general frame. The man lives no longer on food, but like a snipe on suction.

5. Soon, and very surely, the liver suffers. The

alcohol, absorbed and passing at once into the veins of that organ—for which, as well as for the brain, it has a special affinity—arouses an increased activity in its working. And well it may; for by its continued presence in the onward blood, it prevents the effectual riddance of the noxious effete matter, or "waste" (page 12), which then falls to be disposed of in unusual and unnatural quantity by the liver and other excretory organs. And the natural consequence of this accumulated labour is the invasion of disease in various forms. Congestion, inflammation, and functional disorder are common occurrences in the drunkard's flank; seldom can *he* say that his "withers are unwrung;" and ere long a chronic structural change will have set in, so peculiar to himself as to be ordinarily recognised as "the drunkard's liver"—or the "gin liver"—in great measure due, probably, to the almost constant actual presence of alcohol in the substance of the organ.

The experiments of Lallemand, Perrin, and Duroy prove, in corroboration of those of Dr Percy, that the alcohol absorbed from the stomach, always selects the liver and brain for special residence, and may be actually found there in comparatively large quantity, while but little of it pervades the general frame. And of these two organs, the liver seems the more certain to suffer by obvious disease. "Of twenty persons addicted to intoxication," says Dr Basham, "two may

suffer from delirium tremens, for it by no means follows that all will; but not one will escape the effects of disordered liver-function, and ultimate disorganization of this important viscus."

The advocates of alcohol, however, demurring to all this, set up a defence, and protest that their client cannot in justice be accused of constant and habitual action against any part of the body, seeing that it is so very rapidly got rid of, through the organs of excretion. And by way of strengthening their plea, they go on to admit, that were alcohol to be constantly in the blood, the result must be fatal, or at least most formidable. Now, we admit that alcohol is "worked off," and perhaps as quickly as almost anything else ordinarily swallowed by man. Indeed, from that circumstance we are simple enough to suppose, that man's frame does not wish for, and by natural instinct resents its presence. There would seem to be other things than a "vacuum" that nature abhors; and alcohol is one of them. She employs all her energies to get rid of the unwelcome intruder, no doubt; and strains her excretory organs in doing so, endangering them with disease through overwork. But still the success is far from instantaneous. Many hours ordinarily elapse ere all is clear. Alcohol has been found in a man's blood, thirty-two hours after it was swallowed by him, and that not-

withstanding the intermediate operation of emetics and purging.

After a tolerably hard drink a man goes to bed, and sleeps heavily, if not soundly, for eight or ten hours. On rising then, his kidneys plainly tell that the alcohol was plentiful within him just before. At breakfast, the morning dram may renew the supply. In the forenoon comes the biscuit, with glass of sherry, or mouthful of brandy. At dinner there is a fair allowance of alcoholics taken in; and supper over, (for he makes a point of supping, for the sake of what is to follow—he, too, abhorring a vacuum), he cannot go to bed without his "night-cap." Is it not very plain, that thus, in the case of the habitual drinker, who may perhaps never actually reach the crisis that perils the claim to "moderation," a tolerably constant supply of alcohol is kept circulating in his frame? And was it not a rash admission for the alcoholic advocate to make, that the constant presence of alcohol in the living blood were in the last degree disastrous? None of the intervals between the "drinks" is so prolonged as that of the night sleep, during which the proof of alcohol's presence—within the frame, if not in the blood itself—is both simple and satisfactory.

6. The kidneys, however, do not receive the alcohol in so direct a way as does the liver. Ere it reaches them, it is mixed up with the general mass of blood.

Yet there is alcoholic strength and amount enough to stimulate these organs to increased working; at the same time giving them something to work for, in extruding, like the liver, an excess of redundant and injurious material—the "waste." The alcohol itself, too, passes off in no inconsiderable quantity; a fact, as has just been stated, of which every one must be aware, who observes the odour of its diuretic results. And the consequence of this habitual excessive strain on the kidneys is, once more, disease—congestion, inflammation, or chronic change.

Alcohol is a common cause of what is termed "Bright's kidney,"—a most formidable disease, of gradual and insidious origin.*

7. The skin, like the liver and kidneys, excretes; that is, besides other duties, assists in carrying off redundant and effete matter from the system. Its millions of pores are busy at that employment day and night. And they find it quite sufficient work to overtake their ordinary task in a satisfactory way. But the intemperate throws a heavy burden upon them, as on the liver and kidneys—stimulation to a higher rate of working, and an increased amount of work to do. The whole skin suffers in consequence,

* Dr Christison's cases of Bright's disease show a proportion of from three-fourths to four-fifths occurring in drunkards.

by dry heat and feverishness, by blotches and blains, by erysipelas, and carbuncles, and boils, by chronic discoloration and disease. And those parts suffer most which are most exposed to view; as if the suffering texture, by a kind of retributive justice, were permitted to declare to all onlookers the signs of its injurious treatment—

> "Puffing the cheeks, blearing the curious eyes,
> Studding the face with vicious heraldry—
> What perils and rubies doth the wine disclose,
> Making the purse poor to enrich the nose!"

The skin-disease in question, or at least something like it, may arise from some other and more reputable cause, no doubt; but in all cases the evidence points in one way, and in most cases truly, as every one knows. "The show of their countenance doth witness against them."

"Does the priest drink?" said one Irishman to another, "No; never a dhrop." "Then how comes it that his face is pebble-dashed with strawberries?"

Alcohol, then, kills in large doses, and half kills in smaller ones. It produces insanity, delirium, fits. It poisons the blood, and wastes the man. The brain suffers most injury, both in structure and function; next comes the liver, in the order and amount of suffering; and there is no vital organ in the body in

which there is not induced, sooner or later, more or less, disorder and disease.

I might go on. The list of evils is not exhausted, wherewith alcohol is found in most damnatory conjunction. But I feel confident that the case is already more than proved.

Some theorists, indeed, perversely argue, that though alcohol, in large doses, is doubtless poisonous, yet, because it is not apparently hurtful when taken in small quantity, or "moderation," that therefore it is no poison. The same men may, in the same way, assoilzie every article of the animal and vegetable kingdoms that is brought as panel to their bar. Prussic acid in a full dose will kill you like a shot; but doses of two or three drops of the diluted acid, taken three or four times a day, not only do no harm, in certain circumstances, but even effect a great deal of positive good. Therefore prussic acid is no true poison! And so of arsenic. Swallow an ounce, and you die in torture. But in Styria, you will be told that it "actually gives, both to horses and men, increased vigour, increased beauty, and an enviable rejuvenescence, when taken regularly in minute doses." *Ergo*, "horrible arsenic" is no true poison! Is not this horrible quibbling? Arguing thus, you virtually contend for the extinction of poisons as a class. According to your way of it, there can be no

true poison. And verily there is none, if alcohol be not such.

But, I say again, my case is more than proved; and I confidently claim a verdict of "Guilty."

ALCOHOL AS A MEDICINAL AGENT.

From among the fiercest poisons, as just hinted, come some of our most valued medicines—a startling fact, perhaps, to the uninitiated, but nevertheless most true. A knife of very keen edge, when used by a light and dexterous hand, will make a cleaner and better wound than the blunter instrument which has to be pressed heavily on the part. And so the remedy of greatest power, when skilfully timed and apportioned to the varying progress of the case, is often far more valuable in urgent and dangerous circumstances, than the "simples" of the timid practitioner. A few small doses of the one may turn the current of disease, and save valuable life; while, under the other, large and sustained dosings may prove comparatively unavailing. Prussic acid, aconite, strychnine, arsenic, opium, belladonna, are at once intense poisons, and admirable medicines in the hands of the skilful. And we venture to say that not a week passes in the experience of any physician in large practice, in which some of these are not administered for the cure of disease, and with the best effect.

Into this category we cannot refuse to introduce alcohol, and alcohol cannot refuse to come.

By some authorities it has been classed among the *Stimulants;* by others, and more accurately, among the *Narcotics.* The latter, says Headland, "are defined to be medicines which pass from the blood to the nerves, or nerve-centres, which act so as first to exalt nervous force, and then to depress it, and have also a special action on the intellectual part of the brain." Narcotics he further divides into three orders: those causing inebriation—those causing sleep—and those causing delirium. Among the inebriants, he places alcohol first. "The medicines of this order," says he, "taking alcohol as the type, approach more nearly to stimulants than any other narcotics. When given in small doses, their narcotic operation may hardly be perceived. They are then exhilarants; slightly quickening the pulse, and enlivening the mental faculties. When given in large doses, this stimulating action on the heart and mental powers occurs first, and is now more intense; but it is soon succeeded by disturbance and impairment of the intellectual functions."

This latter effect—that of depression, intoxication, or narcotism—is seldom required by the practitioner of medicine; unless, indeed, he clumsily adopt it as a means of deadening sensation to pain, or relaxing

muscular power during surgical operations. Chloroform, we know, does this much better—the effect being more speedy, more manageable, more transient, and consequently less injurious to the system.

The medicinal dose of alcohol, then, is not large, but small* and frequently repeated, with the effect of producing and maintaining the first or stimulant effect, so long as this may be required. And from what has already been said, it will be readily understood that the stimulant power of this agent is exerted on the nervous system and on the circulation, but mainly and primarily on the former.

I. When a man becomes faint, for example, from fear, pain, or sudden injury, and it is desirable to rouse him from the state of *shock* in which he is found, what more suitable than ammonia—a pure stimulant? or brandy—a stimulant-narcotic? The dose of the latter *must* be moderate, however; as, when speaking of the poisons, we have seen how a large amount of alcohol rapidly swallowed by the strongest and healthiest of men may *produce shock* or depression of the nervous power, of the most formidable kind. And it is only by skilful repetitions of this moderate dose

* There are exceptional cases—such as those of flooding, or other great loss of blood—where the exhaustion is so great that very considerable quantities of alcoholics may be required in order to arouse the system, and prevent fatal sinking.

—sometimes even minute—that the rousing effect on the nervous system is produced and maintained, until reaction has fairly set in, and the state of shock has passed away.

II. In certain fevers—such as typhus—there is marked and dangerous tendency to nervous depression; under which, if unchecked, the vital functions become faint, and are apt to cease. Practitioners have in consequence learnt, in certain cases, and still more in certain epidemics, to anticipate and oppose this evil, by an early and judicious use of stimulants. What! wine and brandy in fever! Most certainly. Then is the time to see the use and value of alcohol. There is nothing in nature without its use. Scorpions, snakes, fleas, bugs, and such like unpleasant and apparently unprofitable specimens of zoology, may sometimes puzzle the ordinary observer who would define their exact use in society; yet, bewildered though he be, he may rest satisfied of this, that their operations are beneficial, *sometimes* and *somehow*. And so of alcohol. Often it is most noxious; and looking at the wide-spread mischief that it is ever working around them, superficial observers may be tempted to think that it is only evil, and evil continually. But in this, as in other things, the saying of the wise man comes true, "To everything there is a season, and a time to every purpose under the heaven."

While standing at the bedside of a fever case—urgent, yet doing well under wine—the ship in a terrible sea, yet obeying the helm in its every turn, and steering steadily—I have often wished to have a tippler or a drunkard on one side of me, with a "fanatical teetotaler" on the other, in order that I might have the pleasure of saying, "There, gentlemen, there is a good example of the true use of wine." The man is taking a table-spoonful of sherry, every hour, or every two hours—or a somewhat larger allowance of claret, or a smaller proportion of brandy,—the form and dose of the alcohol varying to meet the varying phases of the disease; and at every dose you can almost see—far more truly than you can see grass growing in a warm summer shower, after long drought—health returning to the otherwise sinking frame:—the cheek less flushed, the skin more cool, the eye more steady and clear, the pulse less frequent and more strong, the tongue more moist and clean, the breathing easier, the sensations all more comfortable. What is the alcohol doing? Not feeding the man in reality, as one might be apt to suppose; but stimulating the nervous system; spurring the nerves and nerve-centres, and keeping them awake, when otherwise they would go to sleep, and leave the vital functions, first to flag, and then to fail utterly—going to sleep too. The nervous power is kept active, and this excites the vital force to work

also. "But the vital strength," you will object, "must be soon used up in this way—exhausted." There is a risk of that, no doubt; but better to run that risk, than let all perish at once without an effort. And by and by the stomach will be enabled to receive some *food* again, and to digest it too; whereby the vital strength will be sustained and replenished, so as to meet the strain. The steamship in the storm—to take up our illustration once more—has but a limited supply of coal; and a vigilant production of steam to work the engines, as she labours in the sea, will tend ultimately to exhaustion of the store no doubt; but still the only chance of safety lies in "cracking on," with the hope that thereby she may be enabled to reach some friendly shelter, where she may both "coal and water" for the rest of her way.

Of course the beneficial effect will be most marked in those who, when in health, are least in the habit of taking alcohol in their ordinary beverages. In such persons, each spoonful tells with a vigorous stroke on the virgin nervous centres; whereas, in the "seasoned" organism, much of the alcohol will be wasted in bringing up the nerves to their ordinary "pitch," and even then the stimulant effect cannot be expected to prove so successful. Slight touches of the whip are sufficient to keep the fresh horse up to his traces; but the scourge must be laid heavily on the jaded hack, and withal

there will be infinitely less power in the pull that follows.

While water-drinking can never render people more susceptible of such disease, it is satisfactory to know, and important to remember, that it makes them much more impressible by the needed remedies when the disease has come.

And another point falls to be considered here. The law of *tolerance.* If disease render my system needful of a certain remedy, or class of remedies—however powerful they may be in themselves, or however noxious, even, under other circumstances—that disease will give to my system, at the same time, the power of bearing that remedy, or class of remedies, with comparative impunity. I have inflammation of my lungs, and I take a grain of tartar-emetic, which affords me relief; and I may go on, taking grain after grain, every two hours or so, without feeling myself made sick, but, on the contrary, feeling myself made better. But if I have no inflammation of the lungs, and take that remedy in like dose, I shall be made very sick in the space of half an hour, or less; and if I attempt to persevere, the symptoms will become those of poisoning. Or I have lock-jaw; I am given a large dose of Indian hemp or "bang," and this is repeated frequently, with the effect of certainly palliating, and mayhap curing the cruel malady. But

give me the same dose in health, and I shall probably be thrown into a trance, with restless tossings and troublous visions, awaking in terror and exhaustion; and were I to *repeat* the dosings as in tetanus, I should run great risk of perishing by narcotism. And so it is here. The necessity for the remedy engenders a power of bearing it; and it seems at the same time to give a fixed and favourable bias to the working of the remedy. Without shock or fever, or other depressing agency at work on my nervous system, spoonful after spoonful, or glass after glass of the alcoholic stimulant, in constant and frequent succession, perhaps for days, would certainly pass the stimulant action and merge it in the sedative; I should become intoxicated, and consequently exhausted—my nervous system grievously depressed. But in the trough of the fever, such dosing goes on without one sign of drunkenness; the brain, on the contrary, growing clearer and clearer in all its functions. Nay, it is even perhaps wrong to speak of wine and brandy, when judiciously handled, having even a *stimulant* action in such circumstances. They do not *excite* the brain *above* the normal standard; they merely bring it up to the normal working, counteracting the state of depression in which they found it sunk, and thus approaching the character of a true tonic. In order to do this accurately and thoroughly, however, it is

very plain that both a careful and skilful management of the remedy is required. *Like other poisons*, it is not to be rashly and empirically prescribed, or the dosing fixed by routine. The case must be suitable, the disease and the necessity for the remedy must be there; the dosing must be well adjusted at starting, and its effects must be carefully watched, in order that it may be duly regulated accordingly.

III. There are some affections of the heart in which the organ acts with great feebleness; the functions of life flag in consequence, the general circulation is insufficient, and danger to life is apt to ensue. Now, alcohol is a stimulant to the heart and blood-vessels, as well as to the nervous system, acting on the former through the latter; and from small occasional doses, as with the ordinary meals, medical experience has shown that in such cases decided benefits may sometimes be obtained.

IV. Again, in these as well as in other cases, dropsies are apt to occur; and it becomes of importance to stimulate the kidneys, with a view of increasing the amount of their secretion; just as in a water-logged ship, the pumps have to be plied with increased energy. The crew as they labour thus are worked in gangs or relays, else exhaustion would paralyse their efforts. Diuretics are the pumping crew in dropsies; and they, too, have to be worked in relays. After a

time, a remedy, which at first was very powerful and satisfactory, loses its effect, and has to be changed; this in its turn has to give way to a second, and so on. Now, alcohol is a diuretic—take gin as its most ordinary variety in such repute—and oftentimes it is found useful; not in doing the whole work continuously—not ordered to-day and gone on with day after day, careless of effects, but taking its place in alternation with other remedies of the class.

V. In the advanced stages of inflammation, more especially when affecting internal organs—and in some unhealthy or weak inflammations, from the very beginning of their course—what is called the stimulant system of treatment is necessary. A condition of nervous depression sets in, resembling what obtains in fever, as already noticed; and alcohol, in various doses and forms, not only may do good, but is sometimes even essential—carefully and skilfully regulated, however, as before. In this respect a great change has taken place of late years in medical practice. Doctors have ceased to be the Sangrados they once were; partly from alteration of views as to therapeutics generally, and partly from change in the nature of disease itself. There has been a remarkable change from the old system of bleeding, purging, and starving in inflammatory affections; and, as ordinarily happens in such reactions, examples have not been wanting of

an excess of reforming zeal, carrying its possessors into a dangerous extreme on the other side. The time is reached, no doubt, when there is less risk of such extremes than formerly; the pendulum has lost its wide swing, and is oscillating, we are fain to believe, pretty steadily in the "juste milieu." But there are writers even now who advocate the remedial use of alcoholic stimulants, to such an extent as cannot fail to prove highly prejudicial, to the minds and morals, as well as to the bodies, of their unhappy patients. Against such flagrant error, we will not scruple to uplift our testimony; claiming for alcoholics an important and useful place in the treatment of inflammatory disease, in certain stages, and of certain forms, but denouncing anything like a promiscuous use of them, and declaring any other than their most guarded and anxious employment to be both unscientific and unsafe.

A diseased joint, or some ghastly sore, is pouring out its cupfuls of daily discharge, and hectic is steadily consuming the patient. In such a case, it is not often that we can exclude wine and malt liquors from our means of cure.

A fierce unhealthy inflammation is spreading along a vein, or burrowing beneath the skin in erysipelas, and the man is labouring for his life in irritative fever. In such a case, the medical attendant well knows that the time for alcoholic stimulus, on account of nervous

depression, is either already come or not far off; and that were his hands tied up from this remedy, there would be but little hope for his patient.*

Or an operation has been performed, and in the suppurative stage of the wound, whether from previous exhaustion, excessive discharge, or accidental loss of blood, what is called "sinking" threatens. This constitutes a crisis in which all means of stimulating the powers of life, and more especially the nervous function, must be employed with promptitude and boldness. And, in consequence, alcoholics, once more, may be brought into appropriate play.

All this—and more than this—is true. These are but samples of the circumstances connected with inflammations in which alcohol is both a safe and powerful remedial agent. We give the drug credit for all its usefulness in appropriate circumstances; but, at the same time, against a general use of it in almost all inflammations, and in almost every stage of them, we protest with all the vehemence in our power.

Another evil we would denounce. A patient is

* There is a striking illustration of the law of tolerance here. It will be afterwards stated that alcohol, *taken unnecessarily*, has a tendency to *produce* unhealthy inflammations—that is, inflammations of a weak and bad type, running on rapidly into destructive suppurations, and even gangrene. But when *this kind of inflammation has occurred*, the medicinal use of alcohol *then* becomes both valuable and essential.

dying. An incurable disease is making its closing grasp on the vitals, or old age is slowly passing on into extinction—the flickering flame all but out. The case is manifestly hopeless; health cannot be restored, and life cannot be prolonged beyond a few hours at most. Is this a case for alcoholic stimulants? Most certainly not. And yet the medical man is apt to fall into the routine of practice; and simply because it is a state of "sinking," to administer wine and brandy in the ordinary way. There is no need for either now: there will be no tolerance in the system; they will not stimulate and support; they will inebriate, and, besides clouding that waning portion of life which ought most of all to be serene, will probably frustrate the professional intent, and, by producing reactive exhaustion, accelerate the end. "Let me go home sober," was the touching expostulation of one so tried; and she was right.

VI. But to proceed. Suppose that colic has attacked a patient, or cramp in the stomach, or flatulent abdominal distention, common experience suggests "a dram" as the cure. No doubt it may afford relief; and when nothing better can be obtained, by all means let it be had recourse to. But remember that there are other remedies at least equally good, and many far more appropriate. And, furthermore, when a man prescribes this for himself, let him be sure of his

diagnosis. If the pain be that of cramp, or a colic, or a flatulency, good and well—the "dram" may do no great harm; if it be not, however, but, on the contrary, the sign of an acute inflammation already set in (as it may be), the "dram" will not only fail to relieve, but must inevitably do harm, acting as fuel to fire. And, moreover, let him beware of magnifying some trumpery uneasiness into such a state of things as to warrant alcoholics. A man fond of the latter, on any plea, may, almost unknown to himself, be too easily persuaded that a physical necessity has arisen for their use—a failing this from which even the lower animals would not seem to be altogether exempt. In a home-park a pensioned pony was leisurely spending the evening of his days, under the kind care of his master's widow. One day she was alarmed by seeing the poor beast rolling on the ground, evidently in pain. The groom was summoned; his diagnosis was prompt—colic; and his prescription consisted of a couple of bottles of mulled ale, which the pony drank readily, and with obvious relief. In a day or two, however, the attack recurred, and the dose had to be repeated. In a few days more, there was another relapse, when the same remedy sufficed for cure. But after a time, the rollings and kickings having become matters of daily occurrence, and always in front of the drawing-room windows, suspicion arose as to their

truthfulness; and a little watching convicted the poor pony, like many another pensioner, of shamming the disease for the sake of the cure. The ale was accordingly withheld, and the colic did not return.*

VII. Exhaustion may affect the frame from sudden causes—such as great bodily effort, or intense mental emotion, or exposure to extreme cold. In these circumstances, it may be necessary to make use of alcohol as a stimulant of the nervous and circulating systems, perhaps with other remedies; all the more, if the patient be under the necessity—real or supposed—of remaining exposed to the depressing cause, for such a time and to such an extent as his unaided powers obviously could not suffice to meet.

VIII. But, besides these *acute* cases of physical and mental exhaustion from overwork or other cause, there are chronic cases, equally important, and far more common. The clerk, the shopman, the sewing girl, the factory worker, the merchant, the minister, the teacher, the student, the statesman—every labourer by hand and head is, in these days of rivalry and competition, prone to overwork. He sets himself to a daily task beyond what his natural powers can overtake without help; and when they either fail to do

* Some people have found it difficult to believe this story. Not so I; for I had it from the lady's own lips.

the task, or accomplish it only at the price of thorough exhaustion, he bethinks himself of a remedy. Obviously, were he to take time to deliberate, he would find two alternatives awaiting his decision: either to diminish the amount of work, or to retain that, and seek to increase the working power by artificial means. In general, however, he sees but the latter; in his haste he adopts it; and as day by day he works on, attaining his object, if not with ease, at least without absolute prostration as before, he looks to the wine or brandy bottle as the best of auxiliaries and the truest of all friends. He commits a sad blunder, however—often a fatal one. Such nervous stimulation will seem to answer well enough on an occasion. When no actual increase of vital strength is to be had—by food and rest—a spur to insure the using up of the last residuum may suffice for once, in a way; but necessarily all the more time will be afterwards required to recover thoroughly from the inevitable exhaustion. And when such shift or substitution is not occasional but constant,—and when, moreover, there is no sufficient correspondence in the amount of compensating rest—the working organism must soon come to be altogether in a most artificial and unsafe condition. It will resemble an over-tasked mercantile house, supported on bills and other means of "accommodation;" the work is done at a great cost; and, at any time, by

failure of the artificial support on the one hand (even for a day), or by a sudden increase of outward pressure on the other, the whole concern may fall to pieces; either stopping at once, or dragging out a crushed existence in insolvency.

If the man will work on under his burden, it is vital strength that he must have increased, to meet and sustain the increased labour. Let him get that, if he can, by the suitable means; and certainly alcohol is not one of them. But if he cannot, then let him, like a wise man, accept the only remaining safe alternative —diminution in the amount of labour. Alcohol gives no addition to the amount of vital strength; it merely urges and sustains the using up of what you already have. No doubt it lays claim, with a considerable plausibility, to a power of restraining or retarding the transformation or disintegration of tissue, during work; but, notwithstanding, its persistent stimulus on the nervous system keeps that change—modified, or unmodified—continually going on. That may do well enough, as has been said, for an occasional paroxysm of work; but its habitual continuance must consume all the sooner the strength's scanty existing store. Excessive work sustained on natural power will exhaust, and lead to a fall; but the fall is not formidable—it is not from a great height—the system is still elastic, and will recover itself after a while. But excessive

work on alcoholic stimulus, while it may postpone the fall, renders that far more serious when it comes—from a greater height, with greater impetus, and more likely to produce a fatal injury.

IX. We have seen that the alcoholic stimulants are of service when the system labours under nervous depression, in consequence of active disease—such as fever, or unhealthy inflammations. They may also prove beneficial in cases of chronic general debility, early supervening on the frame, and settling down on it with a firm hold for life—or sometimes seeming to be born into the world as part and parcel of the patient. In these cases it may be found difficult to get a sufficient quantity of food taken and digested, so as to nourish the body suitably, and enable it to meet even a small amount of work, without an artificial stimulation both of the coats of the stomach and of the nervous system: and therefore, along with other suitable remedies, the use of small quantities of wine, or other weak alcoholic stimulant, from time to time, may under such circumstances be not only legitimate but expedient.

X. There is another class of cases, somewhat resembling the preceding, but with this important difference:—the condition is not congenital, but acquired, and of comparatively recent origin—the result of other disease, or of excessive labour either of body or mind.

Here the alcoholic stimulus is appropriate only for a brief period, so as to keep the patient temporarily afloat, and enable him to overtake some special object in view. The right treatment is to abandon labour, and take rest, with other suitable means for renewing the vital strength, as has already been stated.

It may be well to correct here an important error, yet very current, in regard to the medicinal use of alcohol. People regard it as a simple and common tonic; and are ready to accept its supposed help as such, in every form of weakness and general disorder of health. But it is ordinarily no true tonic. In its primary effect it is merely a stimulant, as has been stated, with narcotic reaction when in large doses. And in its secondary action, it is the reverse of tonic. For while iron, for example, enters the blood and acts beneficially thereon, alcohol entering the blood acts injuriously—so injuriously, that even its advocates admit, as we have seen, that were it constantly present the result would be intensely prejudicial. Alcohol, as a medicine, is very valuable; but not as a true tonic. As formerly stated (page 52), it only approaches that character in cases of morbid and extreme nervous depression. Then, and then only, can it be *pushed* with safety. *Then* its continued presence in the blood is not only not injurious, but positively beneficial—for the time—by virtue of the law of tolerance. This is a

striking example, indeed, of the truth, that many dosings and drugs which tend to kill in health, tend to cure and keep alive in that special form of disease which we know by experience demands their use. Keep alcohol constantly in the blood, during health, and "the result may be fatal." Keep alcohol constantly in the blood, for a time, during typhus fever, or shock, and it may show once more a just claim to its old designation—"Aqua vitæ." Let it not be used then, as an ordinary tonic; and, at the same time, let not the mistakes of those who do so misapply it, detract from its reputation in those circumstances to which its use is really applicable.

I might greatly prolong the consideration of this subject; but enough has surely been said to show what an important place alcohol holds in the materia medica. It is, in truth, a medicinal agent of great power and value; never to be lightly prescribed, and always to be carefully watched and regulated in its administration.

Sundry simple rules apply to its use:—1. Make sure that the case is suitable. There is no more fatal error than error in diagnosis: it is "taking in a wrong figure at the very start of the calculation;" no wonder if the final summation should be ruinously false.—2. Remember the law of tolerance and its converse. If diagnosis is right, the agent will do good and no harm;

if, on the contrary, the diagnosis is wrong, the agent will do harm and no good. In other words, if there be no medical necessity for alcoholic drinks, their use even in small quantity must fail to benefit, and must injure more or less. On the one hand, if there be a necessity for alcoholics, don't be afraid to give them, for the system will bear them well so long as that necessity exists; on the other hand, if there be no such necessity, be afraid to give them, even in small quantity, for the system cannot then receive them with impunity. Such is the double play of the law of tolerance. No doubt, you find men apparently in good health who take daily so many glasses of wine, or their equivalent in spirits or malt liquors, and who nevertheless seem none the worse. But to this the answer is twofold:—First, the absence of evil in effect may be only a "seeming." There may be a gradual and insidious evil at work, though unobserved—much as the malaria does not at the first seem hurtful, yet is gradually accumulating its power within till it burst out in the formidable fever.* Second, the goodness

* The famous Alexis St Martin's stomach, it will be remembered, had a window; and, looking through that, one could often note inflaming patches on the mucous coat, the result of alcoholic indulgence, although Alexis himself felt no headache, thirst, fever, or other inconvenience.

of health may be but a "seeming." May not the unnecessary use of the alcoholics have *engendered* a diseased state of the system, which requires a continuance of the alcoholics to counteract it? Much as in the case of the smoker of tobacco or opium:—in perfect health, the drug would sicken or stupify him; but being in a morbid or unnatural state—in consequence of the drug's previous consumption when not required—the smoking seems rather beneficial than otherwise.* In other words, and in plainer language, the man apparently in health who takes alcoholics habitually with seeming impunity—nay, with a feeling of benefit, as well as of relish—is probably in the same state, though of a minor degree, as the confirmed tippler or drunkard, who has depressed and shaken his nervous system by excessive indulgence in alcoholics, and who must have his alcoholics again to raise his nervous system out of such depression—temporary and deceitful though such raising be. The difference between the two men is in degree only, not in kind. In both there is a depression produced and a stimulus given, and the agent of depression and of stimulation

* "Fermented and distilled liquors," says Royer-Collard, "are never necessary for any purpose, except in certain persons, in whom habit has created a need of them truly morbid; and then these drinks are to be regarded rather in connection with the cure of disease, than with the maintenance of health."

is one and the same.—3. Remember in suitable cases the medicinal mode of administration. The alcohol is not given in such dose as to produce its second or sedative effect—that is truly *poisonous.* Its first or stimulant action is wanted; and, to secure that, the doses must be small; their repetition being in every case regulated by the effect.—4. Supposing the diagnosis and administration right, remember there is a time to cease from its use. This is most important; yet too often overlooked. Suppose a medical man to order blue-pill once or twice a day, and, overlooking its effects, to forget to stop at the proper time. Perhaps the first intimation of his error would be the discovery of intense salivation, with loose teeth, swollen gums, and ulcerated tongue, in his unfortunate patient —the constitution mayhap hurt irretrievably. Or he orders lead, and forgets that he has done so, till the man is struck with a colic or a palsy. Such mistakes are very rarely made—just because their detection were easy. But a precisely similar mistake is far from rare. Alcoholics are ordered—rightly or wrongly; the effects are not watched; their use is not stopped at the proper time; and the first intimation of the blunder may be the painful discovery that the man has become a drunkard. I would not be uncharitable to my professional brethren; but I would entreat them to consider this matter well—satisfied as I am that many

a case of hopeless intemperance, especially among the better classes, owes its origin to ill-regulated medical administration.

Or the evil may fall short of this; and, in illustration, take another case. Suppose a medical man to order opium, to relieve pain or procure sleep, in needful and urgent circumstances, and that he neglects either to regulate its dose, or to order its discontinuance, when the necessity for its use has ceased. The convalescent, improperly left to himself, finds first that he must increase the dose to attain the ordinary effect; and, secondly, that after a time he can ill do without it. Ere ever he is aware, he becomes an opium eater; the victim of an infirmity most difficult of cure. And so with the alcohol. Left without due control, the dose is increased, and the habit becomes confirmed; the system refuses to part willingly with its use; and the man, besides being brought into a morbid state of bodily frame, is in extreme moral danger of intemperance.

ALCOHOL AS FOOD.

Here is the fundamental and fatal error: men esteeming that to be food, and using it as such, which is really not food, but physic.

Food, properly so called, is that which enters the stomach, and is thence absorbed into the general cir-

culation, with the double object of nourishing the body and maintaining its due temperature. Such food meets with a solvent in the natural secretions of the stomach, and of other organs connected with the chyle-making apparatus—such as the salivary glands, the liver, the pancreas; and, besides, a solvent is needful also from without—holding the food in solution at the time of being taken, or swallowed along with it, or after it, in sips or draughts. Now, can alcohol be duly entered here as food, or solvent for food? Not as the latter, certainly. It refuses to act along with the gastric juice. "It is a remarkable fact," says Dr Dundas Thomson, "that alcohol, when added to the digestive fluid, produces a white precipitate, so that the fluid is no longer capable of digesting animal or vegetable matter." "The use of alcoholic stimulants," say Todd and Bowman, "retards digestion by coagulating the *pepsin* (an essential element of the gastric juice), and thereby interfering with its action. Were it not that wine and spirits are rapidly absorbed, the introduction of these into the stomach in any quantity would be a complete bar to the digestion of the food, as the pepsin would be precipitated from solution as quickly as it was formed by the stomach." "And, moreover, it is well known," says Dr Basham, "that spirits completely suspend the secretion of the gastric fluid."

In the laboratory of the pharmaceutist, alcohol is very valuable as a solvent; it holds many things in admirable solution, and many a good tincture it makes. But in the living stomach of man—which *ought* to be no drug-shop—alcohol tends to harden and coagulate rather than to soften and dissolve. "It is through the medium of the *water* contained in the animal body," says Carpenter, "that all its vital functions are carried on. No other liquid than water can act as the solvent for the various articles of food which are taken into the stomach." Water dissolves them there; water carries them into the blood, and through the frame; and water helps to work them off again when useless. Indeed, water seems to have a very remarkable power in the depuration of the system from the noxious presence of effete material—more especially when taken beyond the limits of what mere slaking of thirst requires. And on this *water-power*, no doubt, much of the success of "the water cure" depends.*

But if alcohol be no solvent of food, is it food itself? Let us see. Can it nourish or repair the waste of tissue? Not at all. It contains no sufficient chemical

* The researches of Dr Böcker and others have shown that water is wholly contrary to alcohol in this: its copious use tending very decidedly to accelerate the metamorphosis of tissue, and to increase the amount of excretion.

constitution for that end; and, besides, as we have seen, it is conveyed *unchanged* into the blood,* and so circulates there until removed by the organs of excretion.

Does it help to maintain due temperature? Here we come into debatable ground. Liebig says that it does, by oxidation, or burning, in the lungs. Lallemand, Perrin, and Duroy, more recent, and apparently more accurate observers on this point, say, "No; it passes from the body as it entered, unchanged." We will state the case in both ways.

According to Liebig, then, it is only too ready to produce heat. It is very forward to be burnt in the lungs. But is its action there desirable? The mixed ordinary food of man (as beef, bread, and vegetables) which nourishes his body—doing specially and well what alcohol cannot do at all—contains not only the peculiar materials for nutrition, but more or less of *fat* or *oil*, and *sugar*, or matter convertible into sugar. Now these—especially the oil—are very suitable for oxidation by the lungs,—hence often termed "respiratory food;" and their peculiar function seems to be the undergoing of that process, with a view to main-

* According to the most recent experiments, a small portion of alcohol may be converted into *acetic acid*, through fermentation in the stomach's contents; but that is all the change.

tain temperature—in so far as such maintenance may be necessary, in addition to what is done by oxidation of the waste material returning in the venous blood, as formerly stated (page 15). In other words, the natural arrangement as to maintaining temperature seems to be as follows:—Probably every act of nutrition and every act of disintegration of tissue—the passing of fluids into a solid, and of solids into a fluid condition—is attended with more or less production of heat (page 17); a special supply of spare oxygen being provided for that purpose. Besides, the disintegrated and waste material* in the venous blood is burned off, combining directly with oxygen taken into the lungs. And any further combustion, which may be necessary for completing the efficiency of the warming apparatus, is effected by means of the oil and sugar, more especially the former, which ordinary food supplies. Now, it is ascertained that in ordinary food, received in even moderate quantity, there is not only enough of these combustible materials to ensure sufficient temperature, but more than enough — the superfluity being stored up, as it were, in the ordinary fatty tis-

* It is supposed, as formerly stated (page 35), that the waste material is in its venous transit to the lungs converted into a fatty substance, probably by the action of the liver, for the purpose of readily undergoing this combustion.

sue throughout the body, to meet accidental scantiness of supply.

Suppose now, that alcohol is taken in any considerable quantity, along with the ordinary supply of food, and that Liebig is right in supposing it not only capable of, but prone to intra-combustion. It gets speedily into the blood, and into the lungs. There it has a greater appetite for oxygen than any of the other combustible materials we have mentioned; and accordingly is burned off first. The temperature may be maintained in this way, no doubt. But what happens in consequence of the temperature being thus maintained? Two things; or one of two things at the least:—The oil and sugar are not burnt off sufficiently, and these materials accumulate unduly in the body; or the waste material of the blood is not burnt off sufficiently, and this accumulates unduly in the body—poisoning the blood, and producing the serious consequences formerly spoken of; or both of these results may occur—as we believe would most probably be the case. And a third evil were also possible: The "spare oxygen," as we have termed it—intended to circulate with the blood to the remotest parts of the system, and to act an important part during both the waste of tissue and its repair, so generating heat—might also be seriously encroached upon; so great and

greedy is the supposed appetite of alcohol for this substance.

The obvious deduction is surely this: that when man receives a fair average supply of food, he obtains at least enough of combustible material thereby; and that when alcohol is taken in addition, it is unnecessary; the act is a work of pure supererogation—so far as the supposed warmth-giving by intra-combustion is concerned. And further, the alcohol so taken is not only unnecessary, it is also hurtful, by preventing certain changes in the constituents of the blood, the occurrence of which is essential to health. It is not food; but a chemical or medicinal agent, which, if ordinary food be absent, or greatly defective, or if the emergency be such that there is no time to wait for the digestion of food, might be employed *as a substitute, so far as the maintenance of temperature is concerned.* Or, once more to turn the phrase, alcohol's place is not among the articles of food proper, and *it ought neither to be classed among these, nor used along with them.* Its only pretension to be regarded as food is founded on its alleged combustibility in the lungs, so gendering warmth; and every man who has enough, or nearly enough, of ordinary food, has no need of any such thing; it can do no good *in this way,* and must do harm in other ways.

To him only could it be allowable—as a combustible—who is suffering both cold and fasting—who, during

extreme cold, has either no proper food to eat, or no time to wait for its heat-giving operation, subsequent to leisurely digestion. *He* might use it rationally; but, if he do, let him remember that it has other properties more certain than those of a combustible; that it is safe only for the emergency; and not altogether safe even then, there being danger in the depression, which follows by reaction—as we shall see by and by. And, therefore, to continue its use, as a substitute for food, were to court, or rather secure the invasion of those serious evils, which in a previous chapter we have seen attendant on the free, habitual, and unnecessary use of this powerful agent.

So far Liebig. On the other hand, Lallemand Perrin, and Duroy assert—and seem to have proved —that there is no combustion of alcohol in the lungs; that it passes from them unchanged; and that its only claim to a heat-generator must rest on its stimulant effect on the brain and nervous system, for which it certainly has so remarkable an affinity. More of this anon.

There has been a good deal of quibbling about the words "force" and "food." The alcoholists having a shrewd suspicion that they cannot successfully establish their client's claim to rank as food, in the true and common sense of the term, insist greatly on its

being at least "force;" and that if this be not actually the same as food, it is at least its equivalent. But what is force? "All experience proves," says Liebig, "that there is in the organism *only one source* of mechanical power; and this is the conversion of living tissue into lifeless amorphous compounds." The crumbling down of living solids into what at the time is little better than mere dead matter, is the source of the power whereby every living act is performed, whether of muscle or nerve. The generation of this pulp out of living solids seems to be the source of the power of the human mechanism, somewhat as the generation of "steam" out of water and coke is the source of the power of the steam engine. "Now," say they, "if a man takes alcohol, this 'force' is generated more copiously, and the machinery works with greater velocity and power." Well. But how? and for how long?

How? The alcohol, even according to their own theory, does not act by contributing any living tissue to crumble, or by providing any substitute for it; but by causing merely a more rapid and continued crumbling of what is already there; compelling you to burn your coke and water faster than you were doing, and probably faster than you ought to do—so making more steam; but giving you no addition to your coke and water, or providing any substitute to make steam of. So much for the "how?" according to their own

showing. But, according to the experiments of Hammond and others, alcohol, so far from accelerating, tends to retard transformation of tissue; and acts as "force" only by *maintaining* that change, moderated more or less, longer than Nature, if left to herself, would deem fit, or be inclined to. Or if it do not absolutely *retard* the change of tissue, it at least *retains* the effete products of such change, and so acts hurtfully.

As for the "How long?"—it is plain that if the settlement of this be left to alcohol alone, the machinery will soon be silent. The continuance of work for any considerable time, under such circumstances, will depend upon the activity with which food is supplied—nourishing food—so as to atone, if possible, for the constant consumption of the organism. The man working under alcoholic stimulus, therefore, ought, on the whole, to take and digest, at least as much, and possibly more food, than when working without such stimulus. Yet what is the fact? He takes less. And the inevitable consequence must be exhaustion—premature and excessive. Alcohol is not "force" itself, but only the excitant of "force;" and its invariable effect is, while producing an increased expenditure of "force" by prolongation, to bring the supply of that force to an untimely close. On a railway, it may be quite possible so to hurry power and

speed as to make a show of increased traffic; but if the upshot be to consume "the rolling stock" at a double rate, without doing anything to maintain "the plant," this will be found an expensive mode of managing the line—and withal not very safe.

Our opponents plume themselves greatly on the fact that the working man takes less food with alcohol than without it, and seek to make argumentative capital of this; inferring it to be a proof that the alcohol taken is really a substitute and equivalent for the portion of food which is not taken, and which would otherwise have been consumed. "Thus," they say, "alcohol may be useful to the poor man in an economical sense, and to the dyspeptic man by saving heavy meals." As already stated, the alcohol, by opposing disintegration of tissue, may cause less necessity for food, and the want of it to be less felt, and therefore may seem to come in the place of food; but is not that a sorry substitution?—inducing a state of things inimical to health and vigour. And, besides, the habitual use of alcohol, even in "moderation," diminishes the appetite, as we have seen, by exciting a direct and unfavourable action upon the stomach.* The man, in

* "I cannot eat but little meat;
My stomach is not good,
But sure I think that I can drink
With him who wears a hood."

virtue of his morbid condition, comes to have a less craving for, and a less power of digesting food.* *Therefore* he takes less. And the portion of food which he does not take, and otherwise would have taken, is simply lost to his system by the alcohol. This, moreover, through interference with the healthy function of the liver, has kept waste old material circulating in the blood; and that is offered to the system for nourishment in a fatty and fusted form. There will be no vigorous appetite for fresh food, till that waste material is used up and got rid of somehow—while, meantime, every successive dose of alcohol prevents the due riddance of this obstructive waste. And the question comes to be—Whether shall we take alcohol, eat less, and be imperfectly nourished; or take no alcohol, eat more, and be nourished well? Whether shall we thrive better on a small quantity of new nutritive material, with a great deal of what is old and mouldy; or on a constant and fresh supply of new material, in sufficient abundance to dispense with the old—which, being then in all respects useless, is extruded from the system? Even one less qualified than a "licensed victualler,"

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* "I love no rost, but a nut-broun toste,
And a crab laid on the fire;
A little bread shall do my stead—
Much bread I nought desire."

should have no difficulty in giving the right answer—"The fresh article, if you please; and plenty of it."

Adopting the tactics of the alcoholists, we could make out almost as good a case for tartar emetic as for alcohol. A patient at one time had much too good an appetite, to his thinking; he was getting stout and pursy; and by no ordinary means could he keep the demands of his clamorous stomach within reasonable bounds. At last a happy idea struck him. He would have recourse to physic, so as to produce slight sickness—a morbid condition; and, accordingly, a small dose of tartar emetic was taken, a short time before every meal. This succeeded admirably; the appetite lessened; the "too solid flesh" began to melt; and the patient was quite satisfied. Now, this tartar emetic, in one sense, took the place of food, therefore was a substitute for food, therefore was equivalent to food, and therefore was food!

The most perfect health and strength depend, it would seem, on frequent and complete disintegration of tissue, with a corresponding, constant, and complete replacement of the effete parts by the formation of new material; and this salutary combination is best secured by abundant exercise, plentiful supply of nutritious food, good digestion, and copious drinking of water. The training of prize-fighters, and other athletes, illustrates this: their "condition" being the

result of much strong exercise in the open air, free use of animal food, and the eschewing of all strong drinks in favour of the pure element.

That plea of our opponents will not hold good then. But they have many shifts; and, once again, they put it in this form. "See how little ordinary food the drunkard subsists on. Try you to live on it without the alcohol; and you will die of starvation in a month." Now, even were we to admit the fact—which we do not—the inference is obviously fallacious. It is true that you or I—as healthy men—could not live as we ought on such a small allowance of food; but, keeping away the "alcoholismus" (page 30), reduce us to the same miserable condition of body as the poor drunkard has —little better than a vital zero—and then the same wretched life—if life it may be called—could be managed by either of us, fully as well without as with the alcohol.

This puts me in mind of still another subterfuge. "All respiratory materials—fit for pulmonary combustion—are really food," say they, "and should be considered as such: and alcohol, all must admit, has peculiar claims in that way, therefore it is food." To that we answer—first: Liebig's theory is contradicted by recent observers; second—granting it to be true, for your sake, permit us a simple experiment, in return for your courteous invitation to make trial on

our part of the drunkard's pittance. Try you to live on "respiratory materials" absolutely alone, and you will be fortunate if the issue be not—as invariably happens to animals so experimented on—death within a few weeks, in utmost bodily misery.

Alcohol, then, has no title whatever to be regarded as food, in reference to nutrition, or the repairing of tissue. Its claim to be considered food, *as an ordinary agent* for maintaining temperature by intra-combustion, is founded on no just or sufficient grounds; and, if Lallemand's experiments are true, is in fact untenable. As to its title to rank as vital "force," this rests only on a fallacy.

May it aspire to a humbler position, as an accessory to food, or *condiment*—such as salt, pepper, or mustard?

Salt is a natural constituent of ordinary food; and when, from circumstances, its amount is defective, both men and animals are led by a natural instinct and craving to supply the defect from other sources. Besides, it is present in all the fluids, and almost all the solids, of the healthy body. Nothing of this is true as regards alcohol.

Pepper and mustard are true stimulants; and, mixed with food, may be medicinally carminative. Whether taken in large or small doses, occasional or habitual,—and no doubt they are often used most un-

necessarily,—they are not found circulating in the blood, specially affecting the brain and liver, or exhibiting any such poisonous results on the general system as we have seen to be characteristic of alcohol. Taken to excess in large dose, the stomach relieves itself by vomiting. Taken in small quantities, yet unduly, the stomach loses natural tone, by becoming habitually dependent on the extrinsic stimulus.

In this latter respect there is similarity between alcohol and these ordinary condiments. Being a direct stimulus to the stomach, it may, as such, prove grateful to the recipient's sensations, and seem to help digestion—in most cases fallaciously, however, as has already been shown, although in certain circumstances of departure from health it may occasionally be of some service, as a mere nerve-stimulant to the part. Used thus habitually, it is liable to the same objection as is the constant and indiscriminate use of these other stimulants—atony of the stomach, to a greater or less extent, and disorder of health following thereon.

Besides, remember the all-important fact, that alcohol in its action never can be limited to the stomach alone; but, being invariably absorbed into the blood, must affect the general system.

Herein lies the vast difference between it and the common condiments. And if any place be accorded to it in this category, sensible men will mark it thus

—"Alcohol, a doubtful condiment, in small occasional doses; ordinarily unsuitable, generally unnecessary, and always unmanageable and unsafe."

"What! is a glass of brandy not essential after salmon?" No, sir. If you have eaten salmon to such an extent as to require brandy, it is a sign that you have eaten *too much salmon;* and if, in consequence, a remedy is necessary, you have selected the wrong one. Dip your hand again into the bag of the materia medica, and if an emetic should turn up, you will find that infinitely more appropriate.

To one article, often used as a condiment, I confess that alcohol has in my mind some resemblance—horse radish. Many a man eats this with his beef, and thinks he is the better for it; certainly he seems to suffer not at all. But ever and anon there flashes out a sad calamity of some hapless eater poisoned, through aconite having been taken in mistake. And so there is many a man who takes his dram with salmon and with cheese, day by day, scarcely seeming to suffer thereby; whilst others, by like practice, commit a mistake, and come to fatal poisoning. But there is this sad difference: in the one case, the poisoning is rare and exceptional; in the other, the fatal cases are counted by thousands and tens of thousands.

"What!" say the alcoholists, "will you stop us from shaving, because a man now and then cuts his

throat?" No. But if it so happen that one out of every four or five men who imitate your example *is led thereby* to cut his throat—some maimed and mutilated for life, some absolute suicides—then surely common humanity should persuade you to throw away the razor in disgust, and identify yourself with the beard-cultivation movement.

Let us take one other view of the "Food" question, before leaving it.

A tree is known by its fruits. Food is estimated by its results. A man or animal, subsisting on convenient food, will prosper on it, more or less. How fares it with the man that lives on alcohol? There are some —alas! far too many—who, with much truth, may be said almost to do so. Like Falstaff, they have but a morsel of bread to their much sack. Nay, they pride themselves on being "small eaters;" honestly adding, however, that they "take a good deal of drink;" and then perhaps setting up a plea for this latter questionable virtue being in their case somewhat of a necessity. Some such there are, who live thus by choice; others are driven to it, in a sense, by reason of insufficient food—"their poverty, and not their will, consenting" to this sad substitute. The case of the latter is pitiable, and not without excuse; but, in all, the result is the same.

It is as follows, as has been in part stated already,

when considering the signs of general poisoning (page 36). Be he beer-drinker, wine-drinker, or dram-drinker, who lives thus snipe-like by suction, the evidence of the feeding power of his diet stands thus. Besides the diseases of the various organs, already spoken of, manifesting themselves by their ordinary signs, the stomach early gives way, disrelishing food, save in the smallest bulk, and poorly digesting the little it receives, more especially if the victim be advanced in years. The skin is discoloured and diseased, and hangs loose and flabby on the parts beneath. These are soft and doughy; and there is an excess of water in the cellular or connective tissue, giving a dropsical appearance. Where there should be muscular firmness and rotundity, there is thinness and misery of limb: where fineness and sharpness of outline, there is heavy and mis-shapen softness. The eye is glassy and unspeculative; the tongue is foul, and not so glib as was its wont; the breath is fetid, and noisome eructations with filthiness of spit are ever and anon emerging. The hands are hot and tremulous; the limbs, too, shake, and feebly totter as they go. The clothes hang loose upon the skeleton, as this daily becomes more and more apparent; the cheekbones stare, the cheeks themselves fall in; and the merest child may tell that the whole man, mental and corporeal, is starving. "Come away!" said a late Lord

of Session, to a lean, tall, sallow, withered Writer to the Signet, who entered the Parliament House eating a dry split haddock, or *speldron*, "Come away, Mr ——! I am glad to see you looking so like your meat." This was a mere joke on the part of the learned lord. But in the case of the man we speak of, such a phrase would be full of sad truth. He does indeed look like his "meat"—unsubstantial, unstable, unwholesome; his life "even as a vapour vanishing away."

Or if he be young, and mainly live (?) on malt, there may be an apparent nutrition and growth. Alcohol fattens blood, as we have seen, invariably; and fat blood tends to make fat tissues—not only by depositing fat between existing structures, but by causing it even to usurp the place of these, and so constituting the formidable "fatty degenerations." Well may the man grow fat then, after a fashion! If he have any digestion at all, he can scarcely fail to do so. But the fat is not that which in an ox a flesher would call "prime." It is soft, thin, and ill-coloured. Ill placed it is, too; collecting where no fat should be; putting the outer man all out of drawing, and squeezing some of the internal organs most inconveniently; his voice is changed, his breath is short and wheezing, and his heart is labouring. Rapidly this fat, both out and in, has accumulated, like snow by the wayside; and as

rapidly it may thaw and drip away, leaving as a residue the most gaunt and grisly form of humanity.

There are fat and lean kine, then, produced on this pasturage;* but they are all "ill-favoured." Sometimes there is, as it were, a crossing of the breed, and the two conditions are somewhat mixed up—in every case, however, expressing the unnatural and diseased, and usually betokening a rapid onset of premature old age, as has been well expressed by the great dramatist, "a marvellous observer of men and manners." "Do you set down your name in the scroll of youth that are written down old, with all the characters of age? Have you not a moist eye, a yellow cheek, a white beard, a decreasing leg, an increasing belly? Is not your voice broken, your wind short, your chin double, your wit single, and every part about you bloated with antiquity? and will you yet call yourself young? Fie, fie, fie, Sir John."

In many a case, the fatness is unseen, but all the more dangerous. As already stated, alcohol, habitually and freely consumed, prevents, or at least opposes elimination of waste material from the system; fat is one of the forms in which the waste is prepared for

* As a general rule, malt liquors tend to fatten—*vide* brewers; spirits tend to emaciate—*vide* the wan and wasted waifs of our large towns.

removal; and when retained, this fat necessarily accumulates in the blood and tissues. In this latter, it is deposited, not only as increase, but as substitution—taking the place of what is normal and healthy. The heart, for example, is liable not only to be loaded with fat, but to be in part converted into fat; and the whole arterial tissue is exposed to the same degeneracy. The liver, and kidneys, too, are not exempt. And so the man becomes constitutionally undermined, ere ever he be aware; not only rendered incurably diseased, but liable to sudden death from very slight cause. The insurance offices know this well; and either reject the habitual soaker, summarily, or exact such an additional premium as virtually amounts to refusal of the policy.

Moreover, the fatty degeneration of the structure may be so extensive, and the soaking of the entire frame in unchanged alcohol so thorough, as to render the man dangerously prone to a most lamentable consummation, from a common outward cause—his alcohol proving an "aptitude for combustion" in a way Liebig never bargained for. Falling asleep near a fire or candle, a spark lights upon him; and having become as it were a compound of an oil and spirit lamp —with a dash of phosphorus to boot (page 16)—he burns with a strange burning: producing little flame

or heat, but, if left to himself, steadily consuming away.*

Sometimes the alcoholic evils are long protracted, even in hard and habitual drinkers, who for a time may actually seem of specially robust health. But all is deceitful. Take the stout, burly, red-faced brewer's drayman, for example—who is daily consuming his horns of ale or porter, with his modicum of spirits to make them "light"—and let any disease or accident befall him. This will at once shiver the outward crust of health and strength to atoms. The man can neither bear disease, nor the remedies for disease; the surgeon and physician stand all but helpless at the bed of such a patient; and a scratch or common ail, by which a temperate or abstinent man would not be held for a day, may fatally sweep away this other within a few days, or even hours.

What would prove but a simple healthy inflammation in the temperate, degenerates in the intemperate into an unhealthy kind, prone to pass into gangrene.

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* Examples of this fearful ending are on record—no mere fictions, apparently, but stern facts—though rare. The term of "spontaneous combustion" is a misnomer, only so far as implying that the incremation is of spontaneous origin. Cases will be found detailed by Dr Charles Wilson, in his "Pathology of Drunkenness," page 92, *et seq.*

Four cases of mortification of the lungs are narrated by Dr Stokes—and all in drunkards.

Such are some of the doings of alcohol in the way of nourishing. Looking to the results, we may well say, If this be food, it is manifestly of a very perverse kind—most unwholesome. And those who vend it might, not unreasonably, be dealt with by the civic and legal authorities, as nefariously trading in "diseased meat"—fined and interdicted, with confiscation of all the noxious stuff found on the premises. There is no evidence of alcohol being in any way utilized in the body; and "if it is still to be designated as *food*," says a powerful writer, in a recent number of the Westminster Review, "we must extend the meaning of that term, so as to make it comprehend not only ether and chloroform, but all medicines and poisons —in fact, everything which can be swallowed and absorbed, however foreign it may be to the normal constitution of the body, and however injurious to its functions. On the other hand, from no definition that can be framed of a *poison* . . . . can alcohol be fairly shut out."

ALCOHOL AS A LUXURY.

In arguing against the habitual use of strong drinks, I have often been met with an objection to this effect,

"I do not admit that alcohol has its proper place in the *materia medica*—as you allege—nor yet do I seek to rank it among the articles of *food;* but I regard it as a *luxury*, and use it as such."

Let us consider it in this view.

What is a luxury? Sundry meanings are attached to the word in the various lexicons. The following, if not the most appropriate, are certainly the most favourable to the promoters of such a plea: "That which gratifies a nice and fastidious appetite; a dainty; any delicious food or drink; or anything delightful to the senses." The literal meaning of the word, when used in contradistinction to food, will come out by regard to its derivation—*luo, luxo, luxus, luxuria.* Alcohol, then, we will have to consider as separate from food, and taken in addition to it—as a "dainty," or something "delightful to the senses."

Whence is it taken? From what has gone before, we need have no difficulty in answering, From the *materia medica.* It is something transferred from the category of drugs into that of food, because in its effects it is pleasant or "delightful to the senses." "In its effects," we say; for as regards itself, "the daintiness," and "deliciousness," and "gratifying of appetite," are generally not instinctive but acquired.

Now it so happens that the ingenuity of man has transferred other things in like manner; and these

promise to be of use in helping us to test the rightfulness of transfer in the present instance. The substances to which I allude are tobacco and opium; belonging to the same class of medicinals with alcohol—namely, the narcotics.

Tobacco is one of the most powerful of poisons; and is not without its value—like many others of the same class—as an article of medicine too. Give it, even in small dose, to a child, or to one of any age unaccustomed to its use, and its taste will be found unpleasant, while the effects will be nauseous and disgusting. But habit brings a change in these respects. After a time of longer or shorter probation, and after perhaps no little sickness and distress in the course of it, the recipient of the tobacco—whether it be in fume, or powder, or solid mass—comes to find a strange pleasure and fascination in its use. And many a man, and woman too—nay, even many a stripling—would almost as soon want their daily meal as their accustomed cigar or pipe. They will not call it "food;" it is something "after meat," and they call it "luxury." Sometimes, too, they will tell you that when food cannot be got, it forms no indifferent substitute, tending to keep them "warm and comfortable."

Now, what are the consequences of this acquired habit? Plainly three, at least, may be enumerated:—

I. Harm, more or less, is done to the individual.

The theory of the law of tolerance, already alluded to, shows that; and the proof may readily be completed by adducing the result of experience. In confirmed and excessive smokers, for instance, the tongue soon shows signs of disorder in the general lining of the alimentary canal; the drain on the saliva—run to waste—causes thirst; and the stomach gives plain tokens of an impaired digestion. The hand shakes, there is a peculiar expression of the eye, the heart palpitates, and the entire nervous system is evidently impaired in tone. This is bad enough; but worse may follow. Local diseases, of the most serious kind, may attack the mouth; and one or both limbs may become more or less completely paralysed,*

No absolutely healthy man daily consumes tobacco, in any form, or in any considerable quantity. If he seem to bear it with impunity, it is simply because, by previous use of the drug, he has induced a perverted

* There has been much controversy of late as to the effects of tobacco on the human body; and no doubt, extreme statements have been made on both sides. In the present brief sketch, I state only what I have repeatedly seen, and am sure of.

Dr Marshall Hall—a very high authority on such a subject—has recorded his experience and opinion as follows:—"It is plain that tobacco acts on the cerebrum, the medulla oblongata, and the heart; its effects are stupidity, defective breathing, defective action of the heart—forms of debility and impaired energy."

or morbid state of the system, to which further continuance of the drug's use brings at least a temporary relief (p. 66).

II. The man becomes a slave. For a time he has gone on swimmingly with his "weed." But, by and by, he thinks to leave it off, on account of its expense, perhaps, or its inconvenience, or a sense of mischief done. But he finds it easier to acquire than to abandon—to take up than to lay down. There are two at the bargain-making in either case; but at the beginning and the end their respective positions are reversed. "What has become of your old servant, Robert? You have not surely parted with him?" said a friend to an aged gentleman, at the door of one of the metropolitan clubs. "Yes, indeed I have," "Why? Has he not been with you for fifteen years?" "Yes. But it was full time we should part; and I will tell you why. In the first five years, he was an admirable servant; for the next five, he was a very pleasant companion; but during the last five, he has been a most insufferable tyrant." So it is with the tobacco. At first it is taken up or put down at will, without grudge or grumble; no menial could be more submissive. Next, it comes to be quite on a par with you; and you cannot well stir without taking it at least into consultation. But, afterwards, you are altogether its slave. Provided you do not quarrel with

its exactions, and are content to hug your chains, all may go smoothly enough; the weight of the burden is very imperfectly felt. But if a contention should arise, and you seek to emancipate yourself at a stroke, then the true extent of the mischief flashes upon you to your sore confusion—one of two alternatives awaiting your decision: either to fall back into helpless bondage; or to begin a fight for freedom, of greatest pain and even of doubtful issue.

I have more than one patient just now, labouring under formidable disease, engendered and maintained by the excessive use of tobacco, who, to my urgent remonstrances, return only a sad shake of the head, mournfully saying—"It's of no use to speak. I have tried to give it up, again and again. *I cannot!*"

III. The evil, through your influence and example, is extended to others. Not only is harm done to yourself; but by giving a character and commonness to the practice, you are the means of entrapping the unwary, and thereby extending the evil. You see little ragged urchins on the street clubbing their few pence to purchase tobacco and a pipe; then they congregate in some convenient stair, and striking a light, take whiff and whiff about, till either sick or satisfied. They don't like the smell of the weed, far less its taste; and how comes it that they give themselves this trouble? Simply because they see their fathers

and big brothers do the same, and they think it manly. Or see that breeched boy, with hat and cane, fresh from his mother's apron-string — lounging on the portico, or strolling on the lawn, or swaggering even on the street, striving hard to seem at ease behind that enormous cigar—almost as big as himself—which seems rather to be smoking him than he it. Do you think that he would ever have ventured on such a bold experiment, unless he had seen men, gentlemen, sensible-looking gentlemen, such as you, similarly employed?

You say, "All very true: but it is a luxury; and I like it." In reply, let me simply ask, Is it either wise or right to indulge in a luxury—something not essential—that is hurtful, enslaving, and infectious?

Opium is an intense poison, when given either unnecessarily, or in inordinate dose; yet when duly administered, as necessity requires, it is one of the most precious of drugs. The medical man would be shorn of half his strength were he debarred from opium—in small doses to stimulate, in large to calm and soothe. "Thank God for opium!" fervently ejaculated one of our most experienced and skilful physicians.

But men in health take to it *as a luxury*. And the same unfortunate sequence occurs as in the case of tobacco: first, it is a servant; then an inseparable

companion ; at last a tyrant. It has a special action on the brain ; at first stimulant, afterwards sedative. At the beginning of the dose the cerebral functions are all excited, and usually in a highly pleasurable way; but as the effect accumulates, the mental products become of a morbid or perverted kind ; and at length the nervous function, as regards its influence on intellect, special sense, and muscular power, is lulled into apathy and sleep.

"When a Chinese is about to partake of the indulgence," says Mr D. Matheson, "he retires to a private apartment, and, reclining on his couch, takes his pipe, made for the purpose, and placing on the bowl of it a little opium, about the size of a pea, he sets it on fire at a small lamp, and then throwing himself back on the couch, inhales the smoke at short intervals in a listless mood, till he has attained the desired stimulus, or delirium, as the case may be. If he is a confirmed victim, he usually falls into a profound but restless sleep till the effects of the indulgence have passed off. In the latter case the craving soon returns, and with it all the languor and misery and pain till the next period of relief." All this is done at first by the "little pea." But "that small quantity soon loses its effect," says Dr Little, "and to produce the same amount of excitement, the dose must be doubled, and that again increased, till I have known the original

quantity multiplied one hundred-fold." Some bear up under this, without much outward sign of physical evil, as hard drinkers in this country may do; but, in general, the confirmed "victim" may not conceal his chain and shackles. His body grows weak and emaciated, his complexion sallow, his eye sunk and listless, his features haggard; his body stoops, and expresses strongly, in every movement, a premature old age; the mind is weak and fitful; and the moral tone is both lowered and led astray. This is the period of complete abject enslavement; and the man that, starting from his danger, would struggle to be free, must face an amount of effort, as regards both body and mind, that is all but overwhelming. One in a thousand may escape, as brands plucked from the burning. It is not many weeks since I placed a young opium-eater in a lunatic asylum, at his own urgent request, that other control than his own might be interposed between him and the soul-and-body-destroying tyrant—in whose hands he felt himself to be absolutely helpless.*

* As these pages go through the press, a second case, precisely similar, has emerged. In both of these young men—now inmates of an asylum—the enslavement began in gratifying a desire to *taste* the pleasures of opium, as depicted in De Quincey's "Confessions." Young men, beware!

What sane and sober man will tamper with a drug like this, encountering such a risk for such a boon? Yet it is done by thousands in other climes; and *a like thing is done by thousands more among ourselves*—all under the plea of *luxury!*

Like its brother narcotics, tobacco and opium, alcohol has its seductive progress, when used as a something additional to man's ordinary wants, a "dainty," and "delightful to the senses." Exhilarating at the first,* and pleasurable to the intellectual as well as to the animal sense, nevertheless it tends to pervert, and deteriorate, and destroy what man would most wish to cherish and retain. After a time, too, the amount taken must be increased to produce even the first and best effect; and then the subsequent sinister tendency becomes more and more intensified. A state of mind and body is consequently induced, which craves not only continuance but still further increase of the stimulant. And after every exhilaration there comes depression; the reaction constant and often great. Who so melancholy and moping, in his intervals—who so sad in his sobriety, as the man who depends for mirth and gladness on this deceitful help! Forced hilarity turns out a sorry affair in the long

* The physiological action is known to be identical with that of inhaled chloroform—only neither so rapid nor so transient in its effects.

run. "Go and see Grimaldi," said Abernethy to a hopeless hypochondriac. "Alas," said the poor patient, "I am the man!"

What brings relief? Again be it noted, in letters of fire—for here is the great danger—the drug itself, and nothing else, *at the time.* The man is bitten, and he knows it is for his life; but he is fascinated, and *must* turn to the biter again. This is the terrible peculiarity of alcohol and opium. Their pleasure is followed by pain; and to relieve that pain, a morbid instinct, all but irresistible, leads them to repeat its cause. Relief is felt—transitory and delusive—followed by reaction and relapse. And so in sad sequence the alternation goes—*with no natural check to its progress.*

The individual is hurt, grievously hurt. When alarmed and eager to escape, he finds himself in chains, as a bond slave. And, through his example, society at large is hurt likewise; for his fellows, imitating him—and they may be many—become similarly ensnared.

Now we are far from asserting that this is the invariable result of such luxurious indulgence. We know well that there are many most estimable, upright, and Christian men, who have their alcoholic luxury day by day, and who maintain it in its original place of subjection and control. Their dose is the same now as it was twenty, thirty, or fifty years ago; they

seem none the worse, either in body or in mind; and no human eye, perhaps, ever saw aught in them, through such indulgence, which could breathe a stain on either manhood or Christianity.* But what we assert is, that the *tendency* is, as has been stated—damaging and downwards, not only to the man but to the many. And the momentous question arises—Is this a luxury in which I am free to indulge?

Might it not be well to follow the example of one of the wisest, best, and manliest of men—"All things are lawful unto me, but all things are not expedient; all things are lawful for me, but *I will not be brought under the power of any*"?†

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* Even they, however, are not absolutely scathless. The enslaving result has not been wholly escaped from. In advanced years they will find it difficult to abandon the habit. And even when the mind is ready and willing to make the effort, the body may prove stubborn—the "flesh" may be very "weak."

† There is sometimes an apparent heartlessness in the arguments and illustrations of the alcoholists on this question. "The thing is dangerous in the hands of boys and fools; but for grown and sensible men it is safe. *They* have it in command; and why deny *them* the 'luxury?'" The razor is kept from "Tommy" in his Tommyhood; but when he is grown a man, the "razor is then placed in his hands, with full reliance that he will not cut himself—often." Indeed! He may cut his *chin* every day, and lose blood too. Some day, when you least expect it, he may cut his *throat*. There may be some wit, but there is very little wisdom, and certainly no generosity, in that "often."

Some may take a preliminary and general view; satisfying themselves that all alcoholics are but a luxury at the best, and that what is not needful for any just want, but only a thing "delightful to the senses"—a "dainty," or mayhap a means of "gratifying a nice and fastidious appetite"—is not lawful to them, as seeking to keep the body under and bring it into subjection. With them we quarrel not; but yet are aware that such self-denial is too transcendental for the mass of humanity. And to the latter we would venture to put the matter in another form. Granting the lawfulness of your indulgence in luxuries which are suitable and safe, how stand you to this, which is neither the one nor the other? It is not suitable; for we have shown that there is no exigency fitting for it in the healthy economy. And it is not safe; for we have proved that it must hurt the healthy man more or less; and if at any time he let go the rope with which he holds it in restraint, the most disastrous consequences may ensue. That rope is slippery—that hand is feeble—that risk is great. Yourself may become enslaved and lost; you may be the means of enslaving and losing others. Whereas, by abstaining from the luxury, you sustain no harm: all you lose is a sensual gratification, of at least a doubtful kind; you gain a vantage-ground of great safety for yourself, against both physical and moral disaster; and, by

your influence and example, you may be the means of conferring like benefit on many around you.

The man that uses alcohol as an article of food, honestly—though, as we have seen, most erroneously—believing it to be such, has some excuse. But as for him who uses it as a luxury, avowedly, in the full knowledge of the risk incurred thereby to himself and others, I do not say that he is without excuse; but this I say, that his excuse—if a good one—would cost both him and me some trouble to find.

In another way I have heard the objection put. "Beneficent Providence has filled the earth with food convenient for man's natural wants; and has clothed it too with *flowers*, to regale and delight his senses. May I not look on wine in this light, and use it as I would a flower—at least occasionally?"

The earth is fair with flowers—their fragrance is sweet, and their hues are beautiful. But even they are often the better of man's hand to restrain and guide them; and weeding may be done wisely, too, especially with regard to domestic interests.

There is a place for every thing. Shut up the most fragrant flowers in a bed-room, and let the sleeper tell what he thinks of their perfume next morning. Literally he is sick of it; and well he may, for, through

it, he is sick to all things else. There is belledonna —a graceful plant, with its dark luscious berries, most fair to look upon. But will you place it by the nursery window, or along the daily walk of your prattling children, who may be tempted to put forth their tiny hands, and pluck the deadly poison? Nay. You will rather leave it where placed by nature—in the neighbourhood of ruins, in waste places and solitudes. And there is aconite—beautiful in its spikes of deep-blue helmeted flowers. Will you think it safe to put it into your garden, mayhap near a bed of the esculent horse-radish—for whose root it has so often been fatally mistaken? Better be content with some other ornament, and leave the monkshood to its indigenous mountain sides and wooded hills.

Flowers are luxuries, of the gentlest as well as of the gayest sort. Many—nay, most—are in all respects harmless when in their proper place. Keep them there. And let those that you have nearest you, and in daily companionship, be both simple and safe; not poisonous, or even in any way hurtful, to yourselves or others.

And so with alcohol. If you will have a luxury, take not that. Be content with some other, less formidable to you and yours.

Again; what is fairer than the poppy, spread broadcast in the field? As nature plants and rears it, it is

a fit luxury to the eye. But let man, in his cunning device, torture the plant till it yield its juice; and then *that* luxury—not for the eye, but for a grosser sense—becomes a deadly poison. So with the grape. What fairer than the vine—its climbing stem, its shady leaves, its gorgeous clusters? "The fig tree putteth forth her green figs, and the vines with the tender grape give a good smell." The ripened fruit is a "dainty," both sweet and savoury; and its simple juice, both then and now, unfermented and undecayed, is well fitted to nourish man, as well as to gladden his heart. But as man's "invention" extorted opium from the poppy, so it brought "spirit" from the grape. Out of the simple luxuries that God gave him, wilful man has manufactured poisons. Samson's riddle is reversed—out of *meat* comes forth the *eater;* out of *sweetness* comes forth *the strong*.

The occasional use of both alcohol and opium we readily admit to be most beneficial, under the exaction of disease, and the management of a physician; but to employ either as articles of food, or as mere luxuries, is to pervert the nature of things, and wantonly to incur the risk of the greatest evils.

ALCOHOL: ITS POWER.

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FOR the right use of any agent, a knowledge of its power is quite essential, in order that its working may be duly regulated according to the effect which we desire to produce.

Let us consider the power of alcohol somewhat in detail, although this may involve some repetition of former statements — repetition which may seem clumsy, and inconsistent with due logical arrangement, but which, if successful in rendering the meaning obvious and plain, and so enhancing the practical value of this little book, will, I hope, be pardoned, if not altogether overlooked.

I. *The power of alcohol as a poison.* This is great, as we have seen. In a large dose it may prove instantly fatal, as if by shock; or the victim may linger a while, dying by choking and stupor. With a less dose one may be in great danger, yet recover; carry-

ing for many a day the traces of his injury. In a less dose still, alcohol produces what is commonly called "intoxication;" and if this be frequently repeated, both mind and body suffer sad change—the poison acting chiefly on the brain and nervous system, and on the liver and kidneys. From this cause life may at any time be imperilled by the invasion of active disease—organic or functional: inflammation of the brain or its membranes, apoplexy, congestion, *delirium tremens*, insanity, epilepsy—and diseases of the liver and kidneys, in all their vast variety. Or, by still smaller doses, a cumulative action may be produced, ultimately developing itself in entire prostration of the nervous system —*alcoholismus chronicus*—a condition very analogous to *founder* in the horse, though proceeding from a different cause. Or, once more, by somewhat diminishing the frequent dose, these seemingly greater evils may be avoided, while yet the whole frame is being gradually sapped and undermined; not an organ or a tissue left undisturbed in its structure or function.

In other words, alcohol, according to its dose, and the susceptibility of its victim, is either acute or chronic in its working; a sudden poison, or a slow one.

"A madman casteth firebrands, arrows, and death, and saith, 'Am not I in sport?'" And there is many a man—virtually mad, on at least one point—a monomaniac—who daily saturates himself with this

poison, and seeks moreover to scatter and inject it into others—jestingly announcing, in the midst of an uncomfortable conviction that what he says is true, that if it be a poison, as the doctors allege, it is at least a slow one. Yes. Slow it may be, yet *sure.*

From this we learn, that if a man design to commit murder, he cannot use a more certain agent than alcohol, in the long run; and that, if bent on suicide, he will find it equally effectual. But if he wish to be free from blood-guiltiness, in regard to both himself and others, he will refrain from the use of this agent, in such amount and manner as are invariably—sooner or later—productive of the poisonous result. "THOU SHALT NOT KILL!"

II. *The power of alcohol as a medicine.* This, too, is great; and, in accordance with its strength, requires skilful management.

It is a narcotic, we have seen, with preliminary stimulant power. And it is this stimulant action which is usually employed in medicine. If we wish to keep a part constantly cold, great care and nicety are required in managing the frigorific application—say a cold cloth—lest, through inattention, it become hot, and so induce the very opposite result to that which is desired. So with alcohol, the stimulant action needs a constant and careful watching, lest, by

overdose and overaction, it pass on into the second or sedative stage. Often, no doubt, a small amount of the narcotic effect would seem to be of use in modifying the stimulant, and so giving tone, as it were, as well as action, to the organ or system worked upon. But this requires nice handling.

The brain, and the nervous system in general, we have seen to be very specially acted on in the physiological working of alcohol. And, accordingly, the remedy, when properly used, is of special service in great nervous depression, by injury or disease; continued for hours, or for days. To oppose, when need is, the shock of injury—as in falls, blows, fractures, wounds, burns,* and to counteract the sinking tendency in fevers and unhealthy inflammations, alcohol in small repeated doses, often is admirably efficient.

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* Let it be remembered, however, that in such emergencies it may be made to do the greatest harm, through its very success as a stimulant. A man gets stunned by a blow or fall, and is lying pale and senseless. A blood-vessel has been torn in his head, and if he lie in this languid state for some hours, nature will plaster up the rent; and there will be no escape of blood, when the patient gradually comes to himself again. But in meddlesome kindness, a stimulant is given prematurely—and, unfortunately, wine, whisky, brandy, are always at hand—the blood is made to circulate in force ere ever the rent is healed, blood escapes, apoplexy is produced, and the man dies, not of the hurt, but of the remedy. Even as a medicine, alcohol needs the greatest care. Not only is there a time *for* everything: time *is* everything.

It stimulates the heart and general circulation, too; and in some affections of that organ, feeble action may be helpfully supported by a judicious use of alcoholics. Caution, however, is greatly needed when the remedy comes to be repeated on many occasions, or long sustained in any one occasion, lest that peculiar diseased condition of the heart and arterial tissue be induced, which alcohol's continued presence in the blood so frequently occasions.

It stimulates the kidneys, and so may act as a diuretic; and when other remedies are not at hand, or have already failed, it may sometimes be used either alone or in combination—unless contra-indicated by peculiarities of the case.

When the powers of life are sinking, from any cause —with cold surface, feeble pulse, and general exhaustion—alcohol is often essential as a stimulant. The life of many a one has been saved by it. But all depends upon the regulation of the dose. Let the effect advance to the narcotic or sedative stage, and death will be hastened in consequence. The small doses, skilfully regulated and repeated, and the effect of each watched by some competent eye and hand, alone can be either serviceable or safe.

In one case, a large dose may be used medicinally. In cramp, especially of a vital part, there may be no other narcotic by; and, to save live, it may be need-

ful to give such an alcoholic dose as shall attain the narcotic or sedative result. If the ordinary medicine-chest be at hand, however, there is more than one anti-spasmodic infinitely to be preferred.

In smaller doses it is a carminative; and it enters into the construction of most of the fluids of that class —the warm tinctures, for example. For colic and flatulency, accordingly, it may answer well—provided there be no inflammatory complication.

In dyspeptics of a certain class, in whom the stomach is deficient in tone and energy, small and cautious doses of the milder alcoholics—such as wine and malt liquors—may be of service. And when such defect is the result of natural formation, all but congenital, the use of such stimulus may require to be somewhat prolonged. But in all cases of accidental origin, the medication should be temporary; means being devised and carried out for removing those causes on which the atony depends, and compensating by tonic remedies for the evil already done.

It is to such cases that the apostolic precept applies —"Drink no longer water, but use a little wine for thy stomach's sake, and thine often infirmities." Strange that men should wrest this into an injunction against water-drinking, and in favour of wine-drinking, in general! Do they not see that Timothy—this pattern of men, fearing God from his youth up—was

by habit a water-drinker? that he was to use wine, not as a luxury to please his palate, but as a medicine —for his stomach's sake, and his often infirmities? and that, even then and thus, it was only "a little wine" that he was to use? How can we torture this passage into a permission, far less a recommendation, to use wine for the palate's sake, without infirmity of health, and by the quart?

The power of alcohol, as a medicine, is limited to those cases in which a morbid necessity exists for its use. In all other circumstances, it cannot do good, and not only may, but must do more or less harm, when taken in any considerable quantity, or for a long endurance. Even in the suitable cases, the dose—ordinarily small—must be carefully regulated, and the effects watched, lest overaction and injury ensue.

III. *The power of alcohol as food.* This is easily stated:—properly speaking, none at all.

It has no power to repair waste of tissue. And, even if it had power to supply fuel for the maintenance of temperature—as Liebig affirms—yet, when ordinary food is taken in any thing like sufficient quantity, alcohol as a combustible were both unnecessary and injurious.

The recent French observers deny it all power of making heat by burning in the lungs, or elsewhere; and

seem to have proved satisfactorily that it undergoes no appreciable change whatever within the body, and cannot, therefore, be therein utilized, in any such manner as articles of true food may.

It is only when there is no food, or food insufficient in quantity or quality, that alcohol may be of use as a sort of substitute, enabling a man to continue his work, when otherwise he might fail and stop. But it gives no strength, and repairs no waste; it seems merely to oppose wasting, (the source of all true "force,") as well as to hinder elimination of the wasted matter; while, under its stimulus to the musculo-nervous system, work, or exertion, is prolonged further than the feelings of Nature would dictate or allow. The necessary result is, both deterioration and exhaustion of the working power. Therefore, even as an apparent substitute for food, it is not suitable for continued use, but only for the temporary demands of an emergency.

On the whole, then, "this substance has no claim whatever to rank among articles of food, but must be placed in the category of those medicinal or toxic agents, whose presence in the living body exerts an important influence on its functions, though they do not themselves enter into combination with any of its components."*

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* *Westminster Review.*

IV. *The power of alcohol as a condiment;* or auxiliary to the healthy digestion of food. This, too, will be most truly represented by a negative quantity.

It may sometimes be something of a help to a weak or imperfect digestion, we have seen; but it by no means follows that its action will be the same on a stomach that is sound and healthy. On the contrary, all the general principles we have laid down go to prove the opposite.

Every one must at once admit that it has no analogy whatever to our best and most common condiment, salt. And suppose that, like mustard, pepper or other spice, it were to act as a simple stimulant—what then? The stomach, at present healthy, and consequently sufficient in its working, is excited to an increase of its appetite; and though this is accompanied with an imperfect digestion, yet more food may be converted into tissue-repairing matter than the system actually requires; the equipoise of health is upset, and the inevitable consequence is disease—manifesting itself more or less plainly in plethora, biliousness, fever, or other disorder—all the more certain of invasion, on account of the offensive "waste" having been more or less injuriously retained. Let us profit by the quaint but pregnant epitaph on the tombstone of the poor man who *would* dabble in physic—and see that trafficking in condiments do not

serve us in like manner—"I was well, but would be better, and here I lie."

Alcohol is not in reality a condiment; and when used as such in health, has a power only for evil. That is very appreciable as regards its primary effect on the stomach; and is still more marked with reference to its general effect, after its invariable and speedy absorption into the system.

V. *The power of alcohol as a luxury.* In one sense this is undeniably great; else why the vast consumpt of it as such?

The first effect is to stimulate the stomach, as we have seen; and by exciting the heart, too, to quicken the general circulation. This gives a glow to the system, and is pleasant to the animal sense.

Absorbed, as it quickly is, it acts specially on the brain; and the functions of this organ undergo change. The intellect, through excitement of the imagination, may be said to have a quicker and brighter movement; memory is put upon its mettle, and the play of fancy becomes more free. This, like the former feeling, is agreeable to one's self, and also favourable to social enjoyment; the "pleasures of the table" are enhanced. But such a state is not favourable for intellectual work, inasmuch as even with a comparatively moderate dose, the *tendency* is very decidedly

to diminution of the power of voluntary control, to the *perversion* of intellectual perception, to the confounding of judgment or reason, to the abasing of all moral principle, and to the arousing of animal passion and desire. The *tendency*, I repeat, *is always in this direction;* and, therefore, it becomes at once apparent that such a luxury must always be indulged with no little risk to the moral and intellectual health of the indulger; while the considerations in which we have already been engaged, make it abundantly plain that the danger to his physical estate is at least as certain.

And, besides, this excitement is not got for nothing; it is purchased; and part of the price paid is *reaction.* There is first the "ploy," and then the "reckoning." "Mine host," moreover, proves a most exacting and relentless creditor; not one item of his claim in full will he forego; sooner or later the last farthing must be paid up. The stimulant effect, having in due time passed away, is succeeded by a sedative one; and the heart that had just been enjoying alcoholic gladness, finds alcoholic sadness sternly awaiting it, with all the certainty of sequence between cause and effect. For the marking of the animal pneumometer, when raised by the unnatural heat of spirit of wine, does not, on the removal of this, fall back to the old level from which it rose, but *sinks lower;* and the more sudden and great the rising, the greater and more permanent is the

subsidence. So that were the luxurious bent on avoiding the marring of their pleasure, they behoved to take their alcoholic luxury in small quantities, and frequently repeated—every hour or so—as physicians give their alcoholic medicine in treating disease. That would be the only intelligible plan, at least, of endeavouring to grasp the flower without the thorn; and, after all, it would fail—the law of tolerance proving fatal to it. What succeeds in producing and maintaining a certain effect in the case of disease, is, by reason of its success *then*, all the more certain to fail when applied to the condition of health.

Taken in large quantities, in what is ordinarily called excess, these evils of alcohol are all aggravated. Reaction is great. The man that in his cups was the bravest and the best of fellows, the happiest and heartiest of good companions, is the most miserable wretch alive next day; and by this state of absolute "horror," is driven to seek an artificial elevation once more, by a fresh purchase of the same article—on each occasion at a higher and a higher price. By a depraved and ruinous instinct, the man looks for the antidote in renewal of the poison. "When shall I awake? I will seek it yet again."

This luxurious attainment of pleasure is not like that which comes by food to the hungry, rest to the weary, or draughts of cold water to the thirsty; a

thing to be had always on the same terms day by day, and never palling by repetition. What both gratified and satisfied to-day, may do neither, and certainly will not do both, six months or a year hence. The brain gets hardened, we have seen—actually hardened—by alcoholic saturation; and, in like manner, though not so literally, the constant use of alcoholics, even in moderate quantity, tends to harden the system to their effects; so that the longer they are used, there is a growing necessity for a greater amount in almost each successive dose, in order to obtain the desired result—until the whole system becomes so debilitated and depraved, that but a small quantity then suffices to produce inebriation. Such is the *tendency* in all cases; and in the great majority of cases—in all, indeed, when there is not the restraint of high moral principle and habitual self-command—it is realised.

And yet again—If once habituated to this indulgence, even to a moderate extent, daily, it becomes enslaving. As in the case of tobacco, it grows into a necessary of life—a luxury in one sense no longer—and cannot be laid aside without an effort: such effort implying not only the loss of pleasure and comfort, but the invasion of discomfort and pain, perhaps of no slight amount and degree.

Thus we see that the power of alcohol as a luxury,

though in one sense undeniably great, is not free from most serious qualifications: a power to free, with a power to enslave; a power to gladden, with a power to sadden; a power to raise animal enjoyment, with a power to depress what is best in the mind and spirit; a power to impart a temporary sense of increased health and vigour, with a power of all the while sapping and undermining both. And it falls to be the duty of every sane man to weigh these matters gravely: the boon with the bane, the purchase with the price, the pleasure with the penalty.

Men in health and comfort have no apology for adopting or continuing such a luxury, if, after calm consideration of the subject, they have been brought to an intelligent conviction that the evil overbalances the good. For the miserable in mind and body, we can at least find, if we cannot admit, an excuse. He has a strong temptation, and a bitter experience tells him he can secure a temporary success. "Give strong drink unto him that is ready to perish, and wine unto those that be of heavy hearts. Let him drink and forget his poverty, and remember his misery no more."

But here Scripture is often "wrested" by wilful men to their "own destruction." They will interpret this literally, at least they act as if they did so; as if the "forgetting" of poverty, and the "remembering of misery no more," were final and conclusive. Such are

lulled into a pleasant dream, but the dream is not for ever; sooner or later they must awake, and the dread realities of their lives are all the more dreadful when thrown into sudden contrast with the delusive dream. Alcohol, in this respect, is Satan's chloroform.* For his own ends he drugs men with it, or lets them drug themselves, when pained and miserable; for a time they not only forget their dulness, but are borne away into regions of happiness; but, as the influences of the drug cease, the pain and the misery return—too often with a redoubled poignancy. If they would be rid of their evil, they must have done with such deceitful palliatives, and brace themselves to face the only legitimate cure.

Alcohol is alleged to have other powers besides those that can be conveniently arranged under the

* Carrying out the surgical illustration here, let us ask what is the operation performed by this enemy of mankind, while his patient is made for a time senseless to the pain? Not the excision of any morbid and malignant growth; not amputation of a member which, through injury or disease, has ceased to be useful, and become injurious to the system; not the use of the cautery for the cure of any disease either of body or soul; but excision of the better part of the mental nature, amputation of moral control, and the searing of the conscience with a hot iron—not done all at once, but at many sittings; the foolish patient "etherised" all the while.

heads of Poison, Medicine, Food, and Luxury. These we shall now proceed briefly to consider.

VI. *The power of alcohol to sustain a man under bodily labour.* Many believe that such power exists to a very great degree, and they ground their belief on personal observation. All rests, however, on a fallacy.

Labour exhausts vital strength, for the time,—wasting structure, lowering function. The natural remedy for such exhaustion is food and rest. Waste of tissue is then fully repaired, and the living power of the renovated tissue reaccumulates, ready for a fresh bout of working.

The exhaustion of bodily labour, remember, implies disintegration of substance, as well as diminution of power, especially in two tissues—the muscular and nervous: the muscular is the direct agent of bodily work; the nervous is the inciter and inspector—the "oversman;" and both are more or less exhausted by their respective duties.

Now, how is such exhaustion to be either favourably modified or recovered from? We again say, by food and rest, properly arranged in regard to time and quantity, as we have elsewhere endeavoured to explain.*

* "Labour Lightened, not Lost." Nisbet & Co., London.

Let a man have sufficient food, and sufficient rest, at the proper times, and he needs no other corporeal help for the due discharge of his daily toil. He is thus enabled to overtake as much work as his frame is naturally fit to bear. And if, under such circumstances he break down, or threaten to do so, it is a sign, not that he needs more working power, but that, being overtasked in his natural faculties, a portion of the exacted work should be foregone. And, consequently, the man who stimulates himself, under such circumstances, is guilty of folly, in striving thus to compass what is beyond his natural power; while he who stimulates another, in similar circumstances—in order to obtain advantage from his forced labour—is guilty of cruelty and oppression.

Now, can alcohol be brought under the category of "food" here? As such only can it prove a true antidote to exhaustion by labour. No one asserts that it has any power to repair muscular tissue. Has it any power to nourish or repair nervous tissue? Our best authorities answer the question in the negative. The alcohol has a special affinity for the nervous tissue, and comes plentifully into direct contact with it; but, being wholly unchanged during all its residence within the body, it cannot combine with the nervous tissue, or any other tissue, or form a substitute for these, in any way. Its only power seems to be to harden

structure, and to stimulate function, in the "overs-man."

Well then, if you give alcohol to a man exhausted, or being exhausted, by labour, what effect does it produce? Does it not revive him, giving to his hand a stronger grasp, and to his limbs new vigour? Do not the strokes of his hammer gain a fresh force, and does not the task which he had almost abandoned become rapidly consumed? How is this? Not that he has got any nourishment or repair—any real return of strength; but because he has been goaded on to expend the remainder of his then existing strength or working capital, more thoroughly than he otherwise would or could (or should) have done: the ultimate result, of course, being, that when the task is done, the man is done—nay, overdone—too. The exhaustion is infinitely greater than it otherwise would have been.

The alcohol does not give substance and strength to either of the decaying tissues; it only *stimulates* one of them—the nervous; and so forces on this to force on the other. The nervous system is to the muscular as the rider to the horse, guiding and controlling its movements. Alcohol provides this rider with a spur and whip; whereby the poor horse, jaded though he be, may be urged on to do an amount of work, which otherwise he would have broken down under. With

what benefit to the horse? Exhaustion, fatigue, founder. With what benefit to the rider? There is retribution here; the result is, fatigue and founder too: for the alcohol, acting as a stimulant to the nervous system, exhausts *its* force and disintegrates *its* tissue, in compelling it to urge on the muscles to the exhaustion of their force and disintegration of their tissue. The spur and whip, in their effects, exhaust the horse, but the labour of whipping and spurring exhausts the rider too; and after the effort is over, both the inciter and the incited are in much the same plight. Had it not been better to have ceased from work for a time, giving the beast of burden its food and rest, the dismounted rider likewise seeking his refreshment and repose; so that, after a while, both might have started with new mettle?

If alcohol has any power whatever in giving strength, wind, endurance, *condition*, why do trainers make so little use of it in preparing their men for feats of great exertion? *All* trainers use it, we know, most sparingly; not only in small quantity, but much diluted. And the *best trainers* do not employ it at all; strictly forbidding its use, indeed, because experience has told them of its hurtful tendency, in opposing rather than favouring their object in view.

"Ah but," you reply, "when the hour of trial has

come—whether it be in the strain of the boat-race, the stride of the runner, or the struggle of the brutal prize-fight—is there not then the 'bottle-holder?' and, judiciously administered, does not alcohol do good service, and show its great power, in sustaining the man in his work?" To this we answer, that the supposed case merely proves our position. The *trainer* did *not* use the alcohol; the *bottle-holder aid.* Why? Simply because while it has the power of *stimulating* a man in the hour of exertion to take every drop of "force" out of himself that is in, it has no power of *strengthening*—no power of putting in a store of "force," or keeping it maintained. The "bottle-holder" cannot strengthen his man to hit a harder blow; he can only *waken him up*, from time to time, so that his existing strength may be made to go as far as it possibly can.

In connection with this matter, a special reform in nomenclature is much required. "Refreshments sold here," says the alcohol-vender; and "We must have refreshment," says the alcohol-drinker. By that expression, they do not mean the real refreshments of food and rest, but wine, brandy, beer, and all the alcoholics. In one sense, no doubt, these may make a man "fresh"—according to the slang acceptation of the term; but that is their only claim to the title of "refreshments." They cannot truly refresh under the

fatigue and exhaustion of labour; they only stimulate, and that in rather a left-handed way.

And the alcohol-vender is not content with styling himself a purveyor of "refreshments," he must assume the name of "*victualler*" too! "Why are the trouts not taking to-day?" said a disappointed angler on Tweedside to an old sergeant of dragoons, who plied the gentle art as a trade, and was a great authority in all matters piscatorial. "Ah," said he, "I dinna ken; but there's something far wrang; they'll no come up to their vittels the day ava!" That is the only precedent, that I know of, for alcohol-venders designating themselves "victuallers," and their goods, "victuals." The poor trout, darting after the gay and gaudy fly, finds a sad reaction in the barbed steel that is struck into his flesh. And the tippler experiences a like penalty in the after-workings of *his* "victuals" and "refreshment."

But alcohol, as we have seen, is not without its advocates—intelligent, interested, and indefatigable. They do not easily abandon its cause. Driven to admit that it has no power to *repair* tissue, and *restore* strength, they will yet put in a claim for it as a means of *retarding* the exhaustion of strength, and *diminishing* the disintegration of tissue—on this ground:—Observation shows that a working man, under the use of alcohol, *throws off* less waste tissue, by the organs

of excretion, than he does without it. Granted. But because less waste material is thrown off, does it necessarily follow that less waste is made? Is it not at least possible, that the same or even greater waste taking place, more is *retained* within the system—in the blood; contaminating that all-important fluid? In other words, may not the effect of alcohol be—as the fat globules, so invariably seen by Lallemand and his coadjutors in alcoholic blood, may seem to testify—not to delay or diminish the waste of tissue, but rather to delay and diminish the getting rid of that waste—the amount of which it may have absolutely increased?

Or, if we admit—as the experiments of Dr Hammond and others seem to show—that alcoholics have the power of actually retarding the disintegration of tissue, under work; this implies, as we have seen, absolute impairment of "force"—"force" being disintegration of tissue—and, by continuance of such modified work, under the stimulus imparted to the "oversman" (the nervous tissue), an exhaustion of strength, *ultimately* more thorough and complete than is consistent with the dictates and requirements of nature. And there is a diminished power of reaction and recovery too; for the "waste," being hindered by the alcohol from excretion, accumulates in the blood, which becomes less and less arterial in its character—though its colour may not much vary—and less and less

fit for nourishing and invigorating the frame; so that the relation of alcohol to labour, therefore, will stand as follows:—1. It does not directly repair and nourish, as azotised food does. 2. So far from really restraining, it creates a greater—because more sustained—waste of material, than otherwise would have been the case; so increasing the ultimate amount of exhaustion. 3. By opposing excretion of the waste, it contaminates the blood, and, sending down to the muscles and nerves a fluid not sufficient for their due nourishment and repair, still further aggravates the evil. In other words, so far from restraining waste, it enhances it; so far from favouring, it opposes the power of nourishment, reaction, and repair. Alcohol does not contribute one solitary brick to maintain the wall of the animal economy; nor does it at all avert the spontaneous crumbling of it. On the contrary, it both enlarges the existing breach, and thwarts the masonry that would fill it up. He is surely an unwise builder, therefore, who uses so distempered a mortar!

If we are to have cordials and restoratives, let us have those which really do something of what alcohol professes to do, and does not. You have seen a thoughtless and unskilful horseman, his hands busy with the whip, his seat slack, his legs dangling and jerking like those of a galvanised frog, his spurred and

bloody heels going fast and furious "like a fiddler's elbow," his reins loose on the horse's neck, its nostrils red and heaving, its eyes bloodshot, its ears drooping, its panting flanks drawn up. The animal is galloping painfully through the deep slough; it will drag weary legs home to-night; and very probably it may never do a day's work more. The rider is alcohol; or rather, to fall back upon our former illustration, it is the nervous system riding to the orders and wearing the livery of alcohol. But mark, in contrast, that other rider alongside of him. Firm in the saddle, and with his hands well down, he has a skilful pull upon the *bridle;* keeping the horse well together, he guides his every motion by the pressure of an unarmed limb—the two making common cause, as if a centaur. That horse has as much to carry, and as far and as fast to go, as the other; but he is not distressed; he will find his stable cheerily; and a night's rest and feeding will leave him fresh and uninjured.

Dropping metaphor, coffee and tea are far safer stimulants to the working man than any form of alcohol. Experience says that with them he can do more work, and better work, for a longer time, than with any form or quantity of alcohol. Practical and personal observation has proved it; and science does not refuse its confirmation. For physiologists tell us that these comforts of life have a remarkable power—

especially coffee—of toning the vascular and nervous systems, and at the same time limiting the waste of tissue,* while they have none of the drawbacks of alcohol, more especially that of retaining the waste which disintegration of tissue has produced. A working man under alcohol, once more let me remind you, may give off comparatively little waste by his excretory organs—the liver, and kidney, and skin, for example; but that does not prove that little waste is made. On the contrary, there is every reason to believe that in the long run, an unusual amount of waste occurs, in the aggregate, but does not show, because in part kept noxiously circulating within the system. As if nature, in her haste and anxiety to excrete the alcohol—to her apprehension, the greater evil of the two—had no leisure duly to overtake her ordinary and legitimate work of excreting "waste." A double harm is consequently done. An extravagant amount of the man's body is decomposed, and what remains is poisoned and enfeebled by the waste being in great part retained. On the other hand, a man using tea or coffee, instead of alcohol, will do as

* Dr J. Lehmann remarks "that coffee produces on the organism two chief effects, which it is very difficult to connect together—viz., the raising the activity of the vascular and nervous systems, and protracting remarkably the decomposition of the tissues."

much work, and show as little waste; and yet, so far as we know, nothing occurs to prevent what does run to waste from being safely and satisfactorily got rid of. Nothing is unnecessarily expended, and nothing is injuriously retained; whereas, in the case of alcohol, it is the converse that holds true.

Even such restoratives as these—simple and safe though they comparatively be—are not absolutely required, however. Look to facts, and we shall find men undergoing the heaviest possible amount of bodily labour with the use of the essentials only—food and water. Look to troops campaigning. Look to the Guacho of South America, of whom Sir Francis Head remarks—"As his constant food is beef and water, his constitution is so strong that he is able to endure great fatigue; the distances he will ride, and the number of hours he will remain on horseback, would hardly be credited." And lest it be supposed that these men are cast in some peculiar mould, not fitting for us commoner mortals, listen to Sir Francis' experiment on himself. He did as they did; and "after I had been riding for three or four months," says he, "*and had lived upon beef and water,* I found myself in a condition which I can only describe by saying that *I felt no exertion could kill me.*"

What is meant is, that when restoratives and luxuries are either desired or needed, it will be true

wisdom in the working man to eschew the alcoholics in favour of "that cup which cheers but not inebriates."

Water and milk, no doubt, are the drinks natural to man; and rank, accordingly, as articles of ordinary wholesome diet. Tea and coffee, though not of this class, are not in the same category as alcohol—they take a higher position than that of mere luxuries, and, though somewhat medicinal, are not poisons. They are not without some fair claim to rank as food, fitted for nutrition as well as respiration. Besides the active principle, theine—a nitrogenous compound—they contain a very considerable proportion of starch and gum, as well as of gluten; this last in such amount as to be equal to one-fourth of the weight of the dry leaves. In ordinary infusion, indeed, this gluten is but sparingly dissolved; but were the powdered dry leaves consumed as beans or pease are, they would prove about equally nutritious. There is also a certain proportion of fat or oil in both tea and coffee; while in cocoa the amount of this is very large.

While thus these things may rank as food—far more truly than alcohol—they are in another sense accessory to food, either as luxuries, or in a medicinal point of view. For besides their power of restraining the consumption of tissue, they excite a peculiar action in the nervous system. This action is neither truly stimulant nor sedative, but rather tonic; soothing when there is

over-excitement, rousing when there is depression; and always tending to relieve the nervous centres from congestion of blood.* Besides, from this pleasant and beneficial working there is no untoward reaction, unless the tea or coffee be taken in inordinate quantity; then—especially in the case of coffee—unpleasant symptoms do occur, affecting both the circulating and nervous systems.

Tea and coffee, then, may rank both as food and medicine, as well as luxuries. And the question naturally arises, in reference to their medicinal character, Whether the copious and constant use of them as food is quite proper and safe? This, as we have seen, is *not essential* even under the greatest exertion. And without presuming to dogmatise, we would venture to say that when used as ordinary diet, or as luxuries in connection with it, they ought to be taken weak as

* Tea and coffee, "by diminishing congestion of the brain, tend to clear and tranquillize the action of the mind. This activity of thought is endangered by the cerebral congestion which exists early in the morning, on account of recent sleep—and again towards evening, from the full meal of the middle of the day. It is thus at these times they are found so useful, and are so universally adopted."—HEADLAND *on the action of medicines.* Some of our opponents occasionally attempt to get up a feeble cry that they are *narcotics;* and therefore subject to our anathema equally with alcohol, opium, tobacco, &c. It is scarcely needful to say that this assertion is simply a scientific blunder.

well as in moderate quantity—in other words, temperately;* while large and strong doses ought to be reserved for the necessities of the nervous system arising from exhaustion by labour or thought, depression by accident, or disorder by disease.

When judiciously used, they may contribute greatly to our comfort—as much as any form of alcohol can do, and with none of its sinister results. on body, mind, or morals. Call them medicines, if you will. They are "domestic medicines," at once safe and suitable; and, as such, the canister may range on the frugal cupboard far more appropriately than the decanter or the black-bottle, the tankard, the greybeard, or the glass.

The great advantage of the water-drinker, as compared with the alcoholist, under work, is this. He has the same strength, with greater self-control. He is ready to stop, when necessity requires that he should, and runs less risk, consequently, of injury by excessive strain. He does not expend a temporary energy, at the expense of future exhaustion. He does not avail himself of a doubtful and deceitful help, at the cost of deterioration of the blood, and consequent danger to

* Some have alleged that the success of homœopathic practitioners is not unconnected with the sparing use, or absolute interdiction, of coffee and tea, as well as of all alcoholics, in ordinary diet.

health and life. He does his work at least as copiously and as well as the other, even for a time; and in long continuance of labour, he has the whip-hand of him quite. He obtains his desired end in all respects satisfactorily. There is no lassitude, headache, feverishness, foul tongue, or aching limbs next day—even after the hardest labour. All is fresh, and supple, and free. Reaction is real; blemished by no fever; and not falling suddenly and treacherously away.*

Has alcohol no real and useful power, then, in relation to bodily labour? Yes; but much more limited than is generally supposed. It may be of use in an emergency; not for habitual and daily labour. If an honest, willing horse has a daily round of work to do, what fits him for it is not the whip or the spur, but corn and hay, and water, and regular rest. But if at any time a special effort is to be made, and the ordinary means do not seem sufficient to secure it, then whip and spur may be employed—though always with caution. If a mighty load is to be stirred, if a yawning ditch has to be leaped, if the rising tide or burning prairie be pressing behind the rider, he may well use both heel and hand; even should he have

* "I have backed as many as 60 tons in a day, with perfect ease," says a London coal-whipper, "*since I took the pledge.* But *before*, I should scarcely have been able to crawl home; *certain to have lost the next day's work.*"

cause to fear that the effort which saves his own life may be fatal to the faithful steed that carries him. As a man spurs his horse, so may he spur himself, for the accomplishment of some special end. But obviously that end ought to be of sufficient importance to warrant such a means; and the spurring, even when warrantable, must be conducted with prudence and caution. Alcohol is not a safe means of continuously sustaining man under bodily labour: it is only a spur for a spurt.

VII. *The power of alcohol to sustain a man under mental labour.* All that has been said against its use in bodily labour applies here: and something more. What is true of the muscles is true of the brain—the material organ with the co-operation of which mental work is done. In labour of the hand, alcohol stimulates the brain to stimulate the muscle, and so exhausts both brain and muscle. In labour of the head, alcohol stimulates the brain to an increase of function under mental power, and so effects a continued and concentrated cerebral exhaustion, without being able as we have seen, to afford compensating nutrition or repair. On the contrary, one prominent effect of alcohol, formerly considered, is to impair the nutritive qualities of the blood; and the brain, consequently, comes to be imperfectly nourished. The increased

tear and wear meets less than the ordinary renovating supply; and this state of things, long continued, may produce an absolute wasting of the brain's substance.

But, besides, how does it affect the mind? Such subtle influences, of course, we cannot exactly trace. But we know full well, as was formerly stated, that the use of alcohol, while in moderate doses exciting, quickening, intensifying the imagination, yet always has a tendency to diminish voluntary control,* as well as to depress the moral nature, and clog the faculty of reason. Is that a suitable stimulus for the student? is it a safe stimulus for the man?

There is the same common fallacy here, of course, as in the case of manual labour. The stimulus is felt to do good. "I could not work my work without it." Perhaps. But at what cost are you working your work? Premature and permanent exhaustion of muscles is bad enough; but premature and permanent exhaustion of brain is infinitely worse. And when you come to a point where work must cease or the stimulus be taken, do not hesitate as to the right al-

* It is lawful to learn from the rogue here. Look to the professed gambler. His victims he lures on to wine and brandy, but himself tastes never a drop. While he would have their power of mental control asleep, he keeps his own wide-awake, with his "head cool."

ternative. Don't call for your pale ale, your brandy, or your wine. Shut your book, close your eyes, and go to sleep; or change your occupation, so as to give a thorough shift to your brain;* and then after a time, spent, as the case may be, either in repose or recreation, you will find yourself fit to resume your former task of thought without loss or detriment. Not so with the alcoholic stimulus; the result of this is untoward in two ways—corporeally, exhausting; intellectually and morally, deteriorating.

While, then, the power of alcohol in sustaining manual labour is limited and delusive, its power in reference to mental labour is worse than nugatory; it is noxious, and not warrantable even for a time, to a man in health.

Look to the mental workers under alcohol. Take the best of them. Would not their genius have burned not only with a steadier and more enduring flame, but also with a vapour less sickly and noxious to the moral health of all around them, had they been free from the unnatural and unneeded stimulus?

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* "Rest in thought is procured by abstaining from all *voluntary* effort of thinking, or by *changing* the train and character of thought from grave to gay; from what is severe and exhausting, to what is felt to be light and exhilarating—just as muscles are often relieved, not by absolute cessation, but by alteration in their use."—*Physiology in Harmony with the Bible.*

Take Burns, for example. Alcohol did not make his genius, or even brighten it. It burnt it off all too soon; and though at times the flame may have been both bright and pure, and the fragrance sweet as violets, full well you know that often the light was lurid, the odour naught.

As for the mere intellectual power, try a simple experiment on yourself. Swallow a draught of porter or ale—a pint or a quart, according to your measure. Then sit you down to the solution of a mathematical problem, or to the following out of a hard logical argument, or to the detection of a fine metaphysical subtlety. How sadly hampered you will feel! A painful, puzzled attempt will terminate, not in satisfaction or success, but in a mortified conviction that you have foolishly lubricated your mental machinery with something else than oil; claggy and confounding.

Or, if you prefer an experiment already made, by one transcendently qualified for the task—take the evidence of Hugh Miller. "The workman," says he, in his "Schools and Schoolmasters," "had a 'founding pint,' and two whole glasses of the whisky came to my share. A full-grown man would not have deemed a gill of usquebaugh an overdose, but it was considerably too much for me; and when the party broke up, and I got home to my books, I found, as I opened the pages of a favourite author, the letters dancing

before my eyes, and that I could no longer master the sense. I have the volume at present before me—a small edition of the 'Essays of Bacon.' . . . The condition into which I had brought myself was, I felt, one of degradation. I had sunk by my own act, for the time, to a lower level of intelligence than that on which it was my privilege to be placed; and, though the state could have been no very favourable one for forming a resolution, I in that hour determined that I should never again sacrifice my capacity of intellectual enjoyment to a drinking usage; and, with God's help, I was enabled to hold by the determination."

Or, if you still demur, and allege that this is the testimony of a Scotch and stern school, take that racy Englishman and laughing philosopher, Sydney Smith, who writes thus to Lady Holland, in 1828:—"Many thanks for your kind anxiety respecting my health. I not only was never better, but never half so well; indeed, I find I have been very ill all my life, without knowing it. Let me state some of the goods arising from abstaining from all fermented liquors. First, sweet sleep; having never known what sweet sleep was, I sleep like a baby or a plough-boy. If I wake, no needless terrors, no black visions of life, but pleasing hopes and pleasing recollections: Holland House, past and to come! If I dream, it is not of lions and tigers, but of Easter dues and tithes. Secondly, I can

take longer walks, and make greater exertions, w
fatigue. My understanding is improved, and I
prehend political economy. I see bette
and spectacles than when I used both.
ensues from it: I am in such extravaga
I must lose blood, or look out for some
bore or depress me. Pray leave o
stomach is quite at rest; no heart-bur
distention."

Or what say you to a transatlantic—
Samuel Miller, D.D., of Princeton, New
sixteen years he had followed the advic
sicians, in drinking one or two glasses c
daily. "During all this time," says he,
was delicate. More than six years ago, wh
ing my sixtieth year, I broke off at
experiment had not proceeded more tl
before I became satisfied that my abstine
strikingly beneficial. My appetite was n
my digestion improved, my strength in
sleep more comfortable, *and all my me*
more clear, pleasant, and successful."

The wise brain-worker, when thorough
will rest. When needful of a stimulus and
as oft-times he may be, ere the ordinary or av
time of rest has come, he will prefer tea or co
alcoholics. The former, used in moderation, h

remote evil effect, like alcohol. Unlike it, they do not send blood to the brain, but tend rather to coax blood from it—"clearing the head," as the common expression bears; they stimulate function, at the same time causing no unusual tear and wear of structure, but rather diminishing what would otherwise occur; the whole mind is raised, and no portion of it depressed or deteriorated. We can appreciate the value of a pinch of snuff, when the practice is not habitual; that is, when the insufflation is followed by sneezing, and blowing of the nose, and when the narcotic effect of the drug is not manifested. But it really puzzles one to know how alcohol can benefit the student. Determining blood to the brain in unusual quantity, and that blood deteriorated in quality so as to be no longer well fitted for healthy stimulus and nutrition, but calculated rather to induce stupor; the brain stimulated in an irregular and untoward way—reason hampered, if not perverted, and the power of voluntary control more or less diminished; the moral sense lowered, while animal passion and desire are roused; the brain's actual substance, too, undergoing some structural change, not for the better—how can this state of things favour any form of sound mental labour?

Genius may have its poetical and imaginative powers stirred up into fitful paroxysms by alcohol, no doubt; the control of will being gone or going, the

mind is left to take ideas as they come, and they may come brilliantly for a time. But, at best, the man is but a revolving light. At one time a flash will dazzle you—at another the darkness is as that of midnight; the alternating gloom being always longer than the period of light, and all the more intense by reason of the other's brightness. While imagination sparkles, reason is depressed. And, therefore, let the true student as we have said, eschew the bottle's deceitful aid. He will think all the harder, all the clearer, and all the longer; and in due time, he will prove that the designation of "water-drinker" carries no imputation of missiness or mediocrity. Reason as well as experience warn him to join Samuel Johnson in his cups—avoiding, however, intemperance even in these—rather than to take part with Byron or Burns in their bottles and bowls.

But I may be told—"You are too sweeping in your remarks. Are there not many able students, deep and accurate thinkers—good and godly men too—who habitually take a moderate alcoholic stimulus, and think themselves all the better for it?" True. But in these cases the dose is small, *and kept uniformly so* —a thing that not every one can do. Besides, the *tendency* in the effects of even a small dose is sinister as has been stated; and well though they have done with the alcohol, they would have done better without

it. The feeling of benefit is only an assumption; let them try an interruption, and they will find that they have been leaning on a fallacy. And, moreover, they are working at a great cost; the alcohol is not removing, but only *masking* their fatigue, at the same time spurring them on to greater and more sustained exertion. A horse, suddenly taken lame, limps, and is led to the stable. But, if he has been "*nerved*," he may dash the diseased foot as he will upon the hard streets—he may do much work, and seem sound too —though there is something peculiar and unnatural in his way of going, the rider at all times sitting insecurely; and all the while the navicular disease is making double progress, and bringing the poor animal to the tanyard before his legitimate time. The alcohol does to the hard student what "nerving" does to the horse. Let both keep their pain and fatigue—if not unmitigated, at least unmasked; for these are Nature's wise and salutary checks against excess of labour.

Let me state here a case well illustrating the drift of my argument. A friend of mine, a noble workman of both body and mind, had fallen into weak health; and having been enjoined the use of wine, as a needful medicine, he took his few glasses of sherry daily, although professedly an abstainer. In course of time, the patient became oblivious of one important prin-

ciple of practice, formerly alluded to (p. 67). He forgot to "take stock," from time to time, and see how his trade was flourishing. The medicine was continued, upon chance, for years. I ventured occasionally to suggest a doubt of the same necessity for stimulus remaining as at first. But I made no impression, until my views happened to receive an important backing by a threatening of *gout.* My friend, then truly disquieted as to his tactics, resolved to change them on a venture. The wine was wholly given up, the gout disappeared, and the man rose like a giant. He found that he could do much more work now than formerly, with much less fatigue; and he needed to be restrained, lest by excess of labour, from the very love of it, he should endanger a relapse. One alcoholic result—the gout—did good service here. But it is not always, or indeed often, that so alcohol works its own check and cure.

It is familiar to every one, that in the present day the life of busy man* is more precarious than of yore. We hear of many sudden as well as early deaths. We stop a little to shake our heads sadly, and then push on into the crowd again, unheeding. The lesson is

* I mean those who are actively engaged in business, and whose labour is specially of a mental kind; working under the high-pressure system of the time.

not learnt. Yet this, I feel very sure, ought to be part of the teaching taken home—that at least two causes are concerned in this infraction of longevity: men are moodily and muddily overworking both hand and head, and they know not what they do, by reason of a general use of alcoholic stimulants. Deceived by these, the excess of work is both undertaken and overtaken—after a fashion, but at the cost of a terrible increase of the tear and wear.

Alcohol to the working human frame is as a pin to the wick of an oil lamp. With this you raise the wick from time to time, and each raising may be followed by a burst of brighter flame; but, while you give neither cotton nor oil, the existing supply of both is, through such pin-work, all the more certainly consumed.

From what has been said, it necessarily follows that a man who works both mind and body much must not only fail to benefit, but suffer harm, by the use of alcoholic stimulants. We need not repeat the reasoning. And to those who refuse to be convinced by reason, we would simply say—try experience. Make trial of the change—from the alcoholic to the simple plan of working. Not limiting the time of probation to weeks or days however, as is generally done. You must give time to the system to escape from the

slavery of habit. Months are needful for that; and then you may expect the test to begin to tell. Great blundering is constantly being committed in this way. A man has been for years—well-nigh a lifetime—habituated to moderate alcoholic stimulus, and he says, "Oh, I'll make a fair trial without it. It's all one to me. I'm sure I shall be most happy if the experiment succeeds." And he stops his wonted allowance for a week, or a fortnight, or a month. At the end of that time he comes and says, "I knew what would happen. Your water system won't answer with me. I have given it a fair trial, you see; but I have lost flesh, appetite, and strength. I am uncomfortable, too, and can't get through my work. I must stick to the old way." He thinks he has given your way an exceedingly "fair trial," and he looks to be mightily commended at your hands; yet all the while it has had no trial at all. He never entered upon the road; he stuck half-way in the avenue leading to it. He found himself in the modified "horrors" of abandoning an old alcoholic habit; and by an error of reason, rather than of intention, he hurried back instead of pressing on for an escape. Back to what? To a certain slavery, which even in its lightest and best form is both irksome and unsafe.

Or, again, if the sceptic refuse to experiment upon himself, let him take the evidence of those who have

done so, and who must be taken as highly competent witnesses. Richard Cobden has gone through hard work of both body and mind—especially as an agitator; and he tells us frankly—"The more work I have had to do, the more I have resorted to the pump and the teapot." Or hear Dr Carpenter's Highland minister: —and who works harder with hand, and head, and heart, than the faithful, zealous, earnest pastor? his labour concentrating on that very day, too, which to other men brings rest. "The last thing which he had relinquished," says Dr C., "was his tumbler of whisky toddy on Sunday evenings, which seemed to afford him a great refreshment after the fatigues of two long services, into which he was accustomed to throw his utmost energy. He gave up this at first merely as an experiment, and went to bed on Sunday nights in by no means as comfortable a state as he had been used to do; but he soon found that he rose *so much fresher* on Monday mornings, and was so much fitter for mental and bodily exertion on that day, that he continued his abstinent practice from a conviction of its decided benefit." Or if you refuse to be convinced by a Highlander and Presbyterian, take the equally strong evidence of a Southron churchman—the Vicar of Plymouth. "You all know that my work on the Sabbath-day is very hard, and I used to think that I was entitled to something good after the labours of

the day, and generally took a stiff glass of brandy and water. I did this, as I thought, to strengthen me, but I invariably passed a restless night, was always Mondayish, and felt unfit for anything; but since I have given up the brandy and water, I feel as well on Monday morning as I did on Saturday night."

To all clergymen we would respectfully yet earnestly say—Go and do *likewise!* And we would remind them further, that they are professionally liable to a still more insidious temptation, when they do feel "Mondayish on the Monday." Unable for wonted work with wonted vigour on that day, they may then specially resort, through a kind of professional instinct, to alcoholic help, and, *with that,* labour on as on other working days. The result is in two points of view injurious:—1. They may be readily drawn thus into a habit of dependence—to an increasing extent—on a support which is both dangerous and deceitful. 2. They break the just and natural order of things. Monday should be to the working clergyman his day of physical repose and recovery—his Sabbath, so far as the body is concerned. It is natural that he should feel listless and disinclined for exertion on that day; and it is right that he should rest accordingly. It is unnatural to oppose that sense of lassitude by temporary and artificial means; it is wrong in him to labour on that day, except at the call of "necessity and

mercy;" and it is doubly wrong in his people to ask him to do otherwise. His wisdom as well as his duty is—to be content with the Mondayish feeling on the Monday, and willingly to submit to its exaction of repose; well assured that, after simple and sweet rest during that day and night, Tuesday will come, brighter and better, in its own natural way, to both summon and support him in his resumption of duty. He should *wait* for this day patiently—not seek to *conjure* it some ten or twenty hours too soon.

In one word, alcohol's real power—whether as to mind or muscle—is well illustrated by one of its common results—*delirium tremens:* excitement with weakness. Alcohol has power to excite, but not to strengthen; on the contrary, with the excitement, sooner or later, comes debility.

VIII. *The power of alcohol in relation to the endurance of cold.* The common belief that alcohol has great power in this way is easily understood. Drink a glass of spirits, pure or diluted, and you feel the stomach warmed; the heart and pulse beat quicker and stronger, the whole frame glows, and the warmth is at once speedy, decided, and comfortable; while, at the same time, the nervous centre is quickened to a more vivid perception of the comfort so induced. "Waiter! bring me a glass of brandy; for I am chilly

and cold." So reasons and acts the common man; and as he rejoices in the fiery fumes of his hot tumbler, he thinks himself a most shrewd practitioner.

His scientific brother can explain the matter more thoroughly. According to the recent French experiments, the calorific result must depend mainly on the stimulus given by the alcohol to the nervous system; quickening the heart and general circulation, and sending blood in unusual amount to the surface of the body. So more heat is produced; while, at the same time, heat is dispersed at a diminished rate, on the surface, in consequence of perspiration being supplanted by that dry and feverish state of the skin, which alcohols are so apt to occasion.

Liebig, on the other hand, regards the human interior as a mere laboratory, and the functions of its various parts as the action of mere chemicals. He asserts that alcohol is a grand combustible; and that, when taken internally, its *forte* is the production of heat by ready oxidation in the lungs. What so suitable, then, to raise temperature, when temperature is low? If the man is cold, and wants to be warm, give him alcohol, and plenty of it. Heap fuel on the fire, ply the poker, and blow the bellows!

But, even if this were true, it is to be remembered that the burning of coals in an inanimate grate is one

thing; and that the burning of alcohol in living lungs is quite another. Man is not a mere spirit lamp. Nay, he is not intended to be a spirit-lamp at all, as we have seen—but an *oil-lamp;* and to be used on the principle of a *moderator.* Oil in the food is the special lung-combustible for heating the frame, designed and provided by Nature, in addition to the burning of the waste material of the body; and, as formerly stated, it is believed that such waste is converted into an oleaginous form on purpose to undergo such change. These combustibles are intended to be burnt, and ought to be burnt; if not burnt, harm accrues in many ways; if burnt, they are abundantly sufficient for the due maintenance of temperature. Besides, it will be remembered that a supply of oxygen is needed to go forward with the blood, and carry on the heat-causing changes of nutrition and decay of tissue (p. 17).

Now, if alcohol be combustible, and taken in quantity, it usurps the place of these others. For a time, it may raise the temperature high enough; but important work is left undone, noxious matter is retained, and the whole organism suffers in consequence. Alcohol, in short, would act the part of a forward volunteeer: doing the work of the regular staff; throwing these into dangerous idleness; not doing their work better—if so well; and putting the whole

arrangements into thorough disorder. Indeed, the work would *not* be so well done. Chemistry will quite warrant the strongest assertion of this. For, according to Liebig, the comparative power of these matters as combustibles may be rated thus: Supposing that 100 parts of oil are required to produce a certain result by its combustion, the attainment of the same result by starch will require 240 parts; by sugar, 249 parts; by alcohol, 266. So that, though alcohol seem no doubt a very fair combustible, in its way, yet, even according to Liebig, it is decidedly inferior to all those others which Nature obviously prefers, and has taken care to provide in ample abundance. That it should occupy a lower grade even than sugar, becomes intelligible enough, when the matter is regarded in a strictly chemical point of view; seeing that it is not only a *product of sugar*, but also a *degradation of that substance by putrescence*—altogether a very "inferior article."

Suppose a daily repast provided by a master for a certain number of his hired servants. There is enough for all, but no extravagant excess. He expects that, refreshed by their feeding, they will rise and do their work; the doing of which, and the doing of it well, is essential to the safety and order of the house and household. But an unbidden guest steps in; and professing great power as well as great willingness for this particular work, helps himself to the food, first and fast, leaving

scarce a mouthful to the hungry domestics. Unsatisfied and unrefreshed, *they* have no power to execute the task that now awaits them. But no matter. *He* is both satisfied and refreshed, and he will do it for them. Accordingly he sets to work, and the thing is done—but only in an imperfect and inferior way; while the servants, by reason of unwilling and unwonted idleness, as well as of imperfect and insufficient nourishment, are permanently deteriorated. Would the master of the household tolerate the presence of that forward, greedy, self-sufficient, incompetent and unprofitable intruder? For once, perhaps, he might. But surely on his presenting himself the second day, it would be well to show him summarily to the door. "Ah," but you say, "the illustration does not hold good. There may be a limit to the servant's food: but there is no limit to the supply of oxygen from the atmosphere." Nay, but there is. The oxygen *in* the air is indeed inexhaustible; but the amount of it which human beings can receive *from* the air and convey into the blood is limited. And out of that limited supply the alcohol, helping itself first—as unwelcome as unbidden—would leave no sufficiency for the needy and needed consumers.

But we are forced to withdraw our adhesion to the theory of the great German chemist, and to believe, with the Frenchmen, that alcohol, though very com-

bustible out of the body, is not in the least combustible within it. It passes through the lungs unchanged, and imparts the sensation of heat, while circling within the human frame, mainly by its stimulant action on the nervous system and general circulation.

After the paroxysmal activity of function, induced by this stimulus, has passed away, there invariably comes reaction; and this is a serious matter, even supposing that alcohol did do its work well as a heating agent. The effect does not last. Depression follows the excitement, sooner or later.

It is a bad sign of the weather when the barometer is jumping up and down. Steadiness is the great thing in the weather-glass. But there is no steadiness in the mercury of the human frame, when swayed by alcohol: it rises suddenly, and falls just as soon; according to its rising so is its depression; and each successive dip goes lower than its predecessor. The men that perish in the snow are not those who have refrained from, but those who have partaken of, the alcoholic stimulus. Comforted for a time, by the nerve-stimulus; congested, very soon, in the brain, and growing sleepy, from the same cause—they lay them down, to awake, perhaps never, or only to find that both the sense and the reality of cold have been terribly increased through the deceitful sensations of warmth they had purchased so dearly.

The power of alcohol as a means of enabling us to endure a diminished temperature, then, is very limited, very temporary, and very treacherous—a losing game withal, in the long run. It may be employed now and then, when no sufficient food or other natural means of heat are at hand, or when there is no time to wait for food's leisurely digestion; just as we throw a piece of cannel coal upon the drawing-room fire, when low at night, to brighten it up again. It sputters and sparkles cheerfully in the hearth; but when its flame is over, we are content—the more especially as during its brief blaze it has cost some little trouble to pick its burning sparks from off the carpet. It is neither safe nor suitable for continuance. And when its glow goes out, the room feels very dark, and mayhap chill: it is time to go to bed.

To endure cold, let us be well and warmly clad, so as to retain the heat already existing; taking good and sufficient exercise, if possible, so as to maintain energetic circulation of the blood; avoiding over-exertion and fatigue, which necessarily bring failure and depression in both the nervous and the circulating systems; taking sufficiency of food, nutritious and calorific; and if opportunity serve and require, availing ourselves also of a due proportion of the safe and simple stimulants—tea or coffee, warm.

As examples of nutritious food, for repair of tissue

say beef, or mutton; of calorific food, say fat, butter. or oil in any form. Even according to Liebig—the great chemical authority to whom we were wont to appeal in this matter—one pound of fat is equal to three pounds of whisky as a heat-generator; or to put it in a money-form—one shilling's worth of oil would go as far, in this way, as twelve or fifteen shillings' worth of brandy.* Well then!—give me a good hearty meal of animal food, with bread and plenty of butter, and a hot cup of good coffee, and I am then better prepared for withstanding the frost and snow than your wiseacre who uses the alcoholic warmer, eats sparingly, and boasts of his small appetite. Nay, with such a lining I am better equipped than he who, to a cargo in all respects similar to mine, *superadds* even a single "caulker;" for my calorific agency will prove the more steady and enduring.

Nature teaches us this. Look to the Laplander and Russian. Their favourite food is fat and oil. And Europeans speedily get accustomed to it, too, in these climates. There is many a lad in Scotland who has a stubborn aversion to the fat of meat; he pares

* Even if the respective money values were reversed, the oil would be the better bargain. From what we have seen, alcohol were dear at nothing; the price is paid afterwards, in many a successive instalment, and with compound interest. It may be sweet in the mouth, but it is very bitter in the belly.

it off, and piles it on his plate, let his thrifty mother say what she will. But send him as a cabin-boy on a Greenland voyage, and in the northern latitudes he will speedily get over that little difficulty; what he nauseated at home he will relish there.

Oil or fat, we have seen (p. 154), is the best calorific, chemically considered; starch and sugar the next. How scientific man by nature is, in regard to these things! In cold climates, he instinctively prefers fat meats and oils! in warm climates, he eats farinaceous food; in temperate climates, he ought to combine judiciously the two kinds of diet. The Laplander eats his lard with gusto; the Hindoo his rice; the European has his variety. Who taught any of them to take to the spurious calorific—alcohol? Not Nature; but vicious custom. Not a friend, but "an enemy hath done this." And they are without excuse. For while nature gives an instinctive relish for what is the proper calorific, intelligent observation will tell what ought to be avoided. Dr Carpenter, for example, mentions the interesting testimony of an old man in Dorsetshire, who, though himself concerned in the sale of spirits, and not likely to decry them unjustly or unnecessarily, asserted, in regard to his employment as a fowler, "that although the use of ale or brandy might seem beneficial in causing the cold to be less felt at first, the case was quite reversed when the

duration of the exposure was prolonged; the cold being then more severely felt, the larger the proportion of fermented liquors taken. And he further stated, that all the fowlers of his acquaintance who had been accustomed to employ brandy with any freedom, while out on prolonged expeditions, had died early; he and his brother (who had practised the same abstinence as himself) having outlived nearly all their contemporaries." We are also told that the Russian authorities, well satisfied of the banefulness of alcohol as a calorific, interdict its use absolutely in the army, when troops are about to move during extreme cold; part of the duty of the corporals being to smell carefully the breath of each man on the morning parade, and to turn back from the march those who have indulged in spirits; "it having been found that such men are peculiarly subject to be frost-bitten and otherwise injured." And once more to quote from Dr Carpenter—"The Hudson's Bay Company have for many years entirely excluded spirits from the fur countries to the north, over which they have exclusive control; 'to the great improvement,' as Sir John Richardson states, 'of the health and morals of their Canadian servants and of the Indian tribes.'"

The latest authority on this subject is one in all respects most competent—Dr Rae, of the Arctic expedition; and his testimony is most explicit, that the

effect of alcohol during extreme cold is merely to purchase a temporary stimulus at the expense of subsequent and great prostration.

IX. *The power of alcohol in relation to the endurance of heat.* Its friends would have it a very panacea: good against cold; good against heat.

If it is to be of any service here at all, it cannot surely be in consequence of, but notwithstanding, its virtues as a calorific. It must have some other mode of acting, sufficiently strong to counteract the heating tendency. Nay, if it act at all thus, it must still be as a nerve-stimulant; rousing the nervous system—for a time*—from that state of depression and languor which so commonly results from exposure to extreme heat.

Let us inquire into this matter. Can it be that alcohol is remedial to the effects of heat on the general system, as it is to the effects of heat on a part? We all know that the external use of spirits of wine is an admirable remedy for a scald of the fingers; heat to cure heat. At first the pain is increased, but after a time it deadens, and passes away. How is this? Simply because at first the alcohol stimulated the part,

* Never forget the true narcotic result—stimulus *followed by depression.*

and more especially its nerves; but afterwards the sedative effect took place, and hence the sensation of relief. And as of the part, so of the system, in one sense. I am too hot, and I take alcoholics to "refresh" me. They stimulate my nervous system at first, and for a time, and so give temporary relief from the sensation of exhaustion. But then comes with certainty the reaction, the depression, the languor aggravated and augmented; and the sedative result which was useful in the scald on the part, is prejudicial now on the system. The only escape from the otherwise inevitable evil would be, to take the stimulus in continued frequent repetition, as in fever, or collapse; truly a most dangerous line of practice, and liable to a terrible consummation.

But further—During labour with exposure to great heat, there is, on the one hand, much disintegration of tissue constantly going on, while, on the other, there being small need for combustion, so far as the production of *heat* is concerned, but little, comparatively, of what ought to be consumed is so disposed of. The consequence is, that the combustible part of the food and the waste material of the blood tend to accumulate within the system. The accumulation of the latter, among other evils, induces a feeling of prostration and lassitude; and this feeling must, of course, be increased by whatever tends to increase such accumulation.

Now, that alcohol acts in this way, seems very certain —even though we deny it all claim to intracombustion; its tendency to repress and diminish perspiration will alone account for much evil; and consequently its use must ultimately enhance rather than relieve the sensation of fatigue, as well as its actual amount. Besides, ere long, in the case of its continued use, it will have induced such congestion, or other change in the liver, as cannot fail greatly to impair strength and vigour, and increase the sense of weariness.

In hot exposures—natural or artificial—let the working man eat sparingly, especially of "the fat of the earth;" and let him eschew alcohol as a "poison of the blood," which it really is. In any temperature we have seen it to be unsuitable as a refreshing beverage, in continuance; in a high temperature it is specially unsuitable and unsafe. In India it is notorious that the "fast livers" are the soonest to die. Live temperately, and on suitable diet, as the native does, and you will bear the climate almost as well as he. But stuff the stomach with animal food like a Laplander, or swim it in alcoholics—like a Scotchman, shall I say? —and then you will speedily become the victim of disease. Do both, and you may order your coffin when you please.

But, says some one—"Look how the man sweats! That loss must exhaust him, unless made up. Surely

too, a great authority in all matters connected with the hygiene of armies, has left his record thus:—"Personal experience has taught me that the use of ardent spirits is not necessary to enable a European to undergo the fatigue of marching in a climate whose mean temperature is between 73 deg. and 80 deg., as I have often marched on foot, and been employed in the operations of the field with troops in such a climate, without any other beverage than water and coffee." (On one occasion he marched 118 miles in four days, in Jamaica, carrying weight equal to that of a soldier's knapsack). "So far from their being calculated to assist the human body in enduring fatigue, I have always found that the strongest liquors were the most enervating; *and this in whatever quantity they were consumed.*" "My first voyage was to Jamaica," says Sir John Ross, R.N., "where the captain and several of the crew died. Excepting that I never drank any spirits, I took no care of myself. I exposed myself to the burning sun, slept on deck in the dew, and ate fruit, without feeling any bad effects. *I never tasted spirits; and to this alone do I attribute the extraordinary good health I enjoyed.*" Lately, I had the advantage of conversing on this subject with the veteran Governor of Gambia; and it gives me much pleasure to adduce here his important testimony to the same effect. Having passed nearly twenty-seven years of his life in

foreign service, "within the tropics, and frequently in the most unhealthy stations," he attributes the preservation of his life and health, under God, mainly to this, that from the first he eschewed alcoholics and tobacco. A very large proportion of his comrades he has laid in the grave; and he accounts for their predecease, not by any difference in their constitution or service, but solely by the difference of their regimen. At first he tried both ways of it; and on that account his evidence is all the more valuable. "In many arduous, extensive, and severe expeditions, I used solely *tea* as my beverage: and I always felt free from fever and thirst, well sustained, up to any work (even with the mercury 120° in the shade), as hard as a flint. But, on the contrary, when I used the usual * liquids imbibed by travellers in the tropics—brandy, or rum and water, pale ale, Barclay's XXX—I was invariably heated and thirsty, muscles relaxed, nerves irritable, temper ditto; and what on other occasions constituted pleasing exertion, became more or less labour. Pluck, rivalry, or resolution, like the raven of Barnaby Rudge, 'never to say die,' kept me up to the traces with an extra waste by tear and wear of the constitution. Besides, the dose of alcohol once freely used, must be

* Strange what a binding, blinding hold *custom* takes of rational men! "*Usual!*" That is the evil.

frequently repeated, and *increased in strength*, else it loses, and that rapidly, its falsely stimulating qualities. I have known an officer not thirty—nay, twenty-five years old—commence with *one glass* of brandy and water in the morning, and at last require *one bottle* (or rather consume it) of the *pure spirit*, before noon." He then proceeds to an "unqualified assertion that *tea* in all tropical countries, and under all circumstances, is not only more safe and sanitary, but infinitely more sustaining than any other liquid." "I have served or lived in all the West India colonies, and been in Africa too, and I never knew a dram-drinker, a soaker, a 'jolly trump'—be he of the military, medical, legal, commercial, or any other profession—long-lived, healthy, or *always equal to the duties he was paid for and called upon to perform.*"

With one more quotation from the gallant Colonel I shall be satisfied; bearing upon what may be considered a necessary deduction from what we have already considered—viz., that alcohol is equally ineffectual in sudden alternations of temperature, as in the extremes of either heat or cold. "In 1846," says he, "I joined a party that made the ascent of the Blue Mountain Peak, Jamaica—an elevation of 8,000 feet above the level of the sea. After riding thirty miles, we commenced climbing up the last 2,000 feet, and accomplished the task in three hours, forty minutes.

There was no path or track sufficient to steady a goat; we had to hold on by the trunks, branches, and roots of trees and plants, climbing up hand over hand without relaxing our exertions until we reached the summit. I indulged in cold tea; my friends, in libations of champagne, pale ale, porter, or brandy and water: and the result was, that the more they drank, the more thirsty they were. When we gained the peak, some reached unable to enjoy the romantic view; others flung themselves on the ground exhausted, declaring that if they were caught again ascending, why—no matter what. We remained the night, which proved bitterly cold; the mercury falling from 95° to freezing point. I still continued constant to the China leaf; and next day made the descent fresher and more vigorous than any of the party, although I did lose what I could ill spare from my thin carcase—three pounds in twenty-four hours."

Such testimony is surely conclusive. Yet I cannot forego the opportunity of adducing the authority of other two names—the one yet spared to his country and his time, the other living only in the hearts of all who love the good and mourn the brave. Livingstone, in all his African wanderings, has been a water-drinker, on principle. In his greatest journey, he started with one bottle of brandy as a medicine; but it was acci-

dentally broken to pieces within the first few days; and its loss, even as physic, was not felt. The gallant, glorious Havelock was a water-drinker too. In his arduous campaigning, he knew the value of alcoholics, sparingly and judiciously employed, so as to help men to great exertions, on an emergency, when neither food nor rest could be obtained (p. 136). But on general principles he set his face against alcoholics in the army, and especially in India—satisfied of their deeply injurious influence on both the mind and body of the soldier. In his "Narrative of the War in Affghanistan" he tells us "that though Ghuznee was carried by storm, after a resistance stout enough to have roused the angry passions of the assailants, the Affghans were everywhere spared when they ceased to fight; and it is in itself a moral triumph exceeding in value and duration the praise of the martial achievement of the troops, that in a fortress captured by assault, not the slightest insult was offered to one of the females found in the Zunanu within the walls of the citadel. This forbearance, and those substantive proofs of excellent discipline, reflect more credit on officers and men than the indisputable skill and valour displayed in the operation. But let me not be accused of foisting in unfairly a favourite topic, or attempting to detract from the merit of the troops, when I remark in how great a degree the self-denial, mercy, and gen-

erosity of the hour, may be attributed to the fact of the European soldier having had no spirit-ration since the 8th of July, and having found no intoxicating liquor amongst the plunder of Ghuznee. No candid man of any military experience will deny that the character of the scene in the fortress or citadel would have been far different if individual soldiers had entered the town primed with arrack, or if spirituous liquors had been discovered in the Affghan depots. Since, then, it has been proved that the troops can make forced marches of forty miles, and storm a fortress in twenty-five minutes, without the aid of rum, behaving, after success, with a forbearance and humanity unparalleled in history, let it not henceforth be argued that distilled spirits are an indispensable portion of a soldier's ration."

X. *The power of alcohol to avert disease.* Whatever lowers the condition of health, invites and favours the invasion of disease. The nervous excitement by alcoholic stimulus, with its subsequent narcotic reaction, occurring in frequent alternations, is obviously not conducive to such strong health of system as tends to repel disease. The ups and downs leave, as it were, many weak points in the defensive harness, through which the poisoned arrow may pierce and rankle: whereas the man who holds on the even tenor of his

way, keeps his coat of mail uncreased, showing a smooth and even surface on which the adverse shafts may rattle harmlessly.

Again, there is no more common cause of health-depression than the accumulation of waste material within the system. Indeed, this is not seldom itself a cause of disease of the most serious kind—fever, for example. Now alcohol, if it do not produce, seems certainly to aggravate this condition: and, therefore, we cannot see how, when taken as a means of preventing disease, it can have any other effect than simply to favour its occurrence. Such is the voice of experience; especially in hot climates, as can be readily understood. Even in this country, we have not far to go for facts. In hospitals, it is not the abstinent but the alcoholic nurses and attendants that are struck down by contagion. And when cholera is scourging the land, you may predicate as well as trace its progress, by reference to the sober or drunken habits of the people. In that hamlet, or household, who is the first victim? The drunkard. In that district, which is the spot most plague-stricken? That in which whisky is known to be most largely consumed.

Of 70 male adults affected with cholera in an Edinburgh hospital, in 1848, only 17, even according to their own account had led *tolerably* temperate lives.

And of 140 females attacked by the disease, only 43 were reputed sober.

Moreover, besides rendering the patient more liable to the attack, it reduces his power of enduring it when it comes. As to fever, for example, Dr Davidson has recorded a very significant fact—viz., that out of 370 cases, the deaths among the intemperate amounted to one-third of the whole; among the temperate only to one-seventh. And Dr Craigie states that out of thirty-one deaths from fever in his hospital-wards, only two occurred in temperate persons.

Alcohol has no power of acting as a preservative against disease; nor can it even prevent decay—till we are dead. But people have been somehow led, very generally, into an opposite belief, and—what is worse—they resolutely act upon it. Here, possibly, is a way by which the error has crept in. In the morning we are, in one sense, weak; refreshed by rest and sleep, no doubt; but with an empty treasury, so far as nourishment is concerned. The stomach contains no food, and probably the last portion of chyle has passed up from the bowels. For some hours, perhaps, the blood has ceased to be fed, and the circulation is consequently weak; moreover, much of the combustible portion of the food has been burnt off, and the temperature, in consequence, is apt to fall low. To face exertion and fatigue in such a case

were not wise; and specially imprudent would it be at the same time to encounter the chance of communicated disease—whether by infection, malaria, or otherwise. The natural and proper mode of meeting the difficulty would be, to breakfast forthwith. This is the right thing to do. But perhaps it is not convenient; or custom has arranged it otherwise. The labourer has to do his morning's "moil" of work; the student has to execute his early task; the physician has to go his watchful round—and then to breakfast "with what appetite he may." But can nothing be done in the meanwhile? Is there no stop-gap? A crust of bread, a cupful of milk, or tea, or coffee, would answer well. But somehow that black bottle is always at hand, pushing itself forward as a *substitute;* and perhaps it has got some chamomile heads, or other herbs in it, to qualify it by the name of "bitters." A glass of that is taken; the man feels comforted by it; his ideas of "the congruity of things," too, are satisfied; and forth he sallies, protected at all hands, as he thinks, against every bodily calamity. Now, we do not assert that this "substitute" is in every case noxious. In an emergency, and when nothing else is to be had, it may be better than nothing—especially if followed up speedily by proper food. But when the right thing itself can be procured, the substitute must ever be inferior; and the inferior-

ity is special in this case, seeing that the substitute, by continuance, will prove not only noxious in other respects, but also diametrically opposed to the very object which we use it to obtain. The right thing is breakfast—food, not physic. The wise man takes his first regular meal, when it can be had, almost immediately after his toilet. The next best thing—breakfast being necessarily delayed—is the portion of *food* such as we have already named.*

Attention to this simple matter, I am persuaded, will save oftentimes from ordinary disease; and, moreover, will tend greatly to preserve men from the worst, and, alas, the most common, of all diseases—intemperance. "C'est le premier pas qui coute." It is this villainous alcoholic "morning" that is the first fatal step to many in their downward course of drunkenness. And here I would earnestly urge on all husbands, and

* Europeans in India have been taught by experience the wisdom of such arrangement. Awaking at daylight, languid and weary, after probably a restless night, they have their *chota-hassaree*, or small breakfast. Thus revived, they drive or walk out, employ themselves in household affairs, or transact business—and then, about nine o'clock, assemble to the regular morning meal. "I have been assured," says Colonel Dawes, of the Bengal Artillery, "by one of the ablest of our surgeons in India, that he attributed the remarkable healthiness of a portion of the troops in a large station, at a time of great sickness prevailing among the rest of the troops, to nothing else but the early morning cup of coffee."

especially on all wives, a simple domestic arrangement. The working man, as he creeps out of his home, morning by morning, in cold winter, is perhaps shivery, dull, dispirited; uncomfortable, unwashed, unrubbed, he has huddled on his clothes, half consciously. His stomach is empty, and his energy is low. As he trudges along, a want is plainly felt within; and the feeling of it becomes all the more palpable and painful, when passing that lurid light of the early publican.* His case has been considered for him; the "licensed victualler" has most thoughtfully provided a "substitute" for his food; and the poor man, by a kind of helpless instinct, trundles down the steps, and drinks his accustomed "morning"—as a silly moth circles in the flame, little dreaming that he is to be so cruelly scorched thereby. This is the beginning; we need not here tell the middle and the end. Well, to prevent all this, let a little coffee be made over night, and set past with a bit of bread and butter, and, if the finances will afford it, an egg. In the morning —however early—the gas is lit; and on it is a simple

* "It's the early bird that catches the early worm," said a sage monitor to a little man who had overslept himself. "Yes," quaintly replied the yawning boy, "and what a fool the worm was to be up so soon!" How painfully applicable is this well-known bit of humour to the case in question! The early worm in our case—so easily and opportunely caught—is indeed a fool.

tin arrangement for heating the coffee. By the time the man is washed* and dressed, the coffee is hot. Then let him swallow his egg raw, eat his bread and butter,† and drink his coffee. This is a good small breakfast; it will keep him warm and comfortable; he will feel no want of the morning dram; he will be able to snap his fingers at his considerate friend, the publican; and after some hours of hard work, he will return to a comfortable meal, both less fatigued and less prone to disease than he otherwise would be. This is the optimism of the thing. But if we cannot get all, let us have at least an instalment. If there be no egg, let us have the bread, butter, and coffee; if no butter, let us have the rest; if neither butter nor bread, let us still have the coffee; and, alone though it be, it is worth a thousand of the alcoholic "mornings." There is no excuse for withholding this simple arrangement. The wife need not bestir herself at all in the morning—unless she choose;‡ the gas must be lit at all events; the little heating apparatus may be had

* Washing is quite essential—and it implies rubbing. *Vide* "Labour Lightened, not Lost."

† In winter, the butter should be tolerably *thick*.

‡ Nay, there is no need for a wife at all, for the matter of that. A batchelor can carry through the whole transaction by himself, quite well. Only a wife does it more handily; and a very good wife, so far from grudging the trouble, will take a pride in this "labour of love."

for a few pence, and, once there, it will last a lifetime; while the expense of the coffee is not greater, if so great, as that of the noxious "substitute."

XI. *The power of alcohol to produce disease.* With less than no power to avert disease, though with considerable power, when given medicinally, in suitable circumstances, to modify and restrain it, the power of alcohol to produce disease, when taken unnecessarily and in excess, is all but incalculable. Who has not stood amazed at the impudence of the quack, who unblushingly advertises his nostrum, warranting it to cure all, or almost all, the diseases that flesh is heir to? Alcohol were no quack, were it to claim an equal power; not, indeed, in the way of cure, but in the way of production. "Methinks it doth protest too much!" "Nay—but it will keep its word." Diseases of the brain, of the lungs, of the heart and arteries, of the stomach and bowels, of the liver, of the kidneys, of the skin; gout and rheumatisms; dropsies; palsies; scrofula; premature decay; general poisoning; delirium, epilepsy, fatuity, madness—these are but a part of the long black list that might in sad and sober truth be enumerated, as more or less directly caused by alcohol.

This is neither the time nor the place for entering upon detail in regard to this. We assert the fact, and

defy its contradiction :—There is no one cause of disease, in this country, one-half so prolific as alcohol. And Pandora, as she numbers and estimates the numerous progeny of her box, may well fondle this one especially—"Many daughters have done virtuously, but thou excellest them all."

And the worst of it is, that the disease so induced does not terminate with the life of him or her who produced it. If, unhappily, children be born, they will inherit the evil of their progenitors: stunted in body, and often in mind ;* fatuous, or foolish ; drink-loving, and drunken, in their turn ; scrofulous, rheumatic, consumptive, weak, useless. This is one of the punishments of sin, in the present life, which may in sad bitterness be traced downward from parent to child—"iniquity of the fathers visited upon the children, and upon the children's children," even "unto the third and fourth generations."†

XII. *The power of alcohol to cherish old age.* "The

* According to Dr Howe, in his report on idiocy to the Legislature of Massachusetts—"The habits of the parents of 300 of the idiots were ascertained; and 145, *or nearly one-half*, are reported as 'known to be habitual drunkards.'"

† Dr Livingston tells us that consumption, scrofula, stone, are quite unknown in Central Africa. Is this happy immunity connected with the comparative absence of alcoholics that reigns there?

old man's milk!" This is one of the many *aliases* that alcohol trades under. "By all means," say many, "keep strong drink from the lad and the boy—'corn is not for *staigs*;' but the grown man, if he be discreet, may take at least a little with impunity; and for the old man, a cordial is absolutely necessary; it rouses the feeble heart, and warms the chill limbs, and ever and anon helps the ebbing tide to flow again." Very plausible, and very pretty! Unfortunately, it is not true.

The life of the old man is a quiet, reduced, gentle affair; with none of the tumult of youth, and none of the energy of middle age. The machinery is well nigh worn out; all is feeble, and parts are wanting, or but ill repaired. The play of a strong and sudden steam-power would now be very dangerous.

All is well-arranged by Nature; and all would be well, comparatively, were we but content with the arrangement. The engine is crank and weak, but little coke is taken in, but little steam is generated, yet the piston plays pretty well in its own weak way; though, to be sure, the periods of work are brief, and the intervals of rest prolonged. "But no," says the alcoholic wiseacre, as he rudely interferes, "the coke must be made to burn more brightly, and more must be shovelled on; the working power must be increased, if not in force, at least in continuance, for we

cannot bear to see the pull so weak, and the speed so slow"—down-hill, and steep in the gradient, though the tramway be.

The old man's appetite is small, because he needs but little food; little food is needed, because he is not intended for much work; the little work he does, produces no very great amount of disintegration of tissue; yet the feebleness of his circulation, and breathing, and power of excretion, make it difficult for him to work off the "waste," such as it is. With prudence, a tolerable adjustment may be maintained; and such is Nature's arrangement for the evening of our days. But you say, "No. We must have the bright light of morning, if not the flash of noon—if not always, at least now and then." An alcoholic cordial will stimulate the appetite, more food will be taken, and then——"Aye, there's the rub:" What then? That food is not digested; or if it be in part, it hampers the blood with what it cannot manage; the nervous system is roused to call an action from the various organs which they cannot bear; and the alcohol tends to shut up the "waste" in a dangerous accumulation. No wonder that the old man is in consequence made liable to apoplexy, and congestion of the brain; to palpitations and angina; to wheezing asthma, and bronchitis; to heart-burn and indigestion; to jaundice and bilious attacks; to gout

and gravel: to troubles of the skin; or to some sudden and great calamity from a plurality of morbid causes combined.

Look at the old man's leg. A wasted, shrivelled thing; the bone's edge as sharp as a knife, the skin loose as the pantaloon, the muscles flabby and weak. When the man is up, what say you to galvanising it, by some powerful battery, so that it may disport itself, at least occasionally, as if in the leaps and gambols of its youth? Would not success imply great danger of a break-down?—rupture of muscle or tendon, or fracture of bone? And yet what is absurd and mischievous on the part, you would bring to bear on the whole system! By your alcoholic stimulus you would seek to jerk the poor old man into a convulsive and paroxysmal imitation of his younger days, the least injurious effect of which must be exhaustion, and acceleration of general decay.

So much for his body; what of his mind? That is intended for no adventitious stimulus such as alcohol's. It is evening-tide with him, and the light should be subdued, yet clear. He has accounts to settle, his house to set in order; he has a long way to go soon, and he would see clearly at least the path's beginning: he has to commune much with himself, much with those around him, and most of all with his God. He would be calm and composed as he approaches nearer

and nearer to the solemn interview, face to face, with the yet Unseen but Not Unknown, and the then Judge of All. And what do you with this "Cordial?" Do you not reflect that it has a special action on the brain, exciting, yet perverting? Rousing imagination, with which the old man has little now to do, for it is stern reality that is both beside and before him; it is the last and great assize he is hastening to, and imagination has no place there. Diminishing self-control, abating the already enfeebled power of will, and tending to depress all that he would seek to exalt in his moral and spiritual nature—unfitting him quite for that else promised mounting up with wings as an eagle, that running and not being weary, that walking and not being faint.

I protest that I know no more painful sight than the old man thus abused—often in mistaken kindness; his weak frame shaken and strained under forced potations, and his mind lapsed into a maundering state little short of inebriety.

And men call this food—cordial—milk—"the old man's milk!" A strange perversion of words! Seeking fish, will ye give him a serpent? Asking for bread, will ye give him a stone?

In the case of children possessed of anything like fair health, the ordinary use of alcoholics is especially

absurd and reprehensible. They need no stimulus; and it is well known that in them the nervous system is very intolerant of narcotics in any form. Opium, for example, must be given in very guarded doses, otherwise the most serious results cannot fail to ensue. And alcohol, having such a direct and powerful action on the brain, will most certainly not be borne with impunity, unless its use be demanded by the stern necessity of disease. Unless the law of tolerance intervene, the beer and wine given to children must ever prove more than mere non-necessaries.

XIII. *The power of alcohol to prolong life.* Enough has been said to render any formal consideration of this question altogether unnecessary. It has no such power, save in the fancy of the foolish, or in the wit of the humourist.

The one may tell us that—

> "The best of all ways to lengthen our days,
> Is to steal a few hours of the night."

But we know that such theft deceives itself, is soon detected, and comes to a bad end.

Or again—"Mr ——, if you really wish to lengthen your days, you must give up wine." "I believe you, I believe you," replied the witty barrister, with a sad smile; "for yesterday I took no wine, and it was certainly the longest day I ever experienced."

And this is all! So far from prolonging, it shortens life. The drunkard dies soon; the free liver dies sooner than he otherwise would; and of the moderate but habitual alcoholist it is no want of charity to say, that if he attain to a good old age, it is not *in consequence of* his "luxury," but *notwithstanding*.

Let the sceptic try a simple practical experiment formerly hinted at. Let him propose to insure his life; let him set down, opposite to "habits," this answer—"Takes wine and spirits freely;" and we are much mistaken if the alternative proposed to him by the directors, of having either his proposal declined, or an extra premium assessed, do not bring him to another way of thinking. Or let him take this fact. There is a life insurance office, last year issuing upwards of 2500 new policies, which has two branches: one solely for abstinents, the other for ordinary business—the insured in the latter being of course a fair average of "temperate" men. These two branches—abstinent and temperate—have been in parallel operation for about seven years: and the result is nineteen per cent. in favour of the former.*

* In a private note, the resident director says:—"The bonus in the temperance section was just 19 per cent. more than in the general section. I find that in the years 1855 and 1856 the amount paid on account of claims in the temperance department was considerably less than was paid in the general section; that is, comparing the receipts

Or let him step from the civil into the military department; and referring to the government returns regarding the mortality of troops in India, he will find these troops arranged in three classes—abstinent, temperate, intemperate—with their respective mortalities as follows:—abstinent, 11 in the 1000; temperate, 23 in the 1000; intemperate, 44 in the 1000.

XIV. *The power of alcohol to affect the mind.* This is undeniably great; but is it for weal or for woe?

Recall what has been already said upon this subject; and for the convenience of further illustration, divide the mental condition into these four parts:—1. the intellect; 2. the will, the governing and controlling power; 3. the moral emotions; 4. the animal passions and desires. Now, the well-ascertained effect of alcohol, when taken in any considerable quantity, is to stimulate one element of the intellect—the imagination; to impair the power of control; to pervert and

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and disbursements for claims in the two sections. It is true, the claims in the general section were unusually heavy in 1855, but I have put the two years together. In the temperance section, we paid in the two years less than one-third of the amount received. In the general section, we paid £12,305 out of £26,912; which is not much less than half! These figures apply to the whole-life policies only; and give a decided advantage to the temperance section."

degrade the moral nature;* to excite and intensify that which in the passions and desires is sensual. In a larger dose, the intellect is thoroughly perverted; the will and the moral nature are extinct, or almost so; and that which is animal in emotion towers in the ascendant. With a larger dose still, the distorted remnant of intellect may hardly be recognised, while the base and the brutal reigns paramount. The evil desire of lust or revenge often remains, while the paralysed body refuses to minister to its gratification. A pitiable spectacle indeed! Verily it is no stretch of language to say that drunkenness places man on a level with the brute! The language falls short of truth. He digs beneath that deep a lower deep, and in this the brutified man wilfully lies down and wallows.†

* The Rev. Dr Hitchcock, of Amherst College, testifies that one of the decided results of his abstaining from wine was "the power of determining with greater accuracy the nature of the religious emotions;" while the Hon. Judge Brewster states—"From experience and observation, I believe that the use of fermented drinks is one of the most potent agencies in paralysing the life of active piety and holy obedience."

† "A dram drinker! Faugh, faugh!" says Christopher North. "Look over, lean over that stile, where a pig lies wallowing in the mire—and a voice, faint and feeble, and far off, as if it came from some dim and remote world within your lost soul, will cry, that of the two beasts, that bristly one, agrunt in sensual sleep, with its snout snoring across the husk-trough, is, as a physical, moral, and intellectual being, superior to you—dram-drinker, drunkard, dotard, and self-doomed."

Such are undeniably the effects of alcohol in considerable and large doses. Taken in smaller quantity, the effects are less marked, but have still the *same tendency.* There is moral as well as mental loss; injury as to *what the man is,* with serious peril as to *what he ought to be.* Moreover, let it be remembered that the effect intensifies by frequent repetition, and that no dose of alcohol, however small, can be taken without acting on the brain, and consequently we believe on the mind, more or less.

The ultimate result of such actings, we have seen to be, in extreme cases, delirium, fatuity, insanity; mental disease. In the more protracted and chronic cases, intellectual perversion, animal ascendancy, moral abasement; mental degradation and decay.*

A man begins fairly, and continues respectable for a time. At first his indulgences are only convivial, and within moderate bounds. These bounds, however, are by and by transgressed—once and again. And after no long time, it too frequently happens, that the love of and dependence on the unnatural stimulus

* "The habit of using any intoxicating liquor," says the Rev. Dr Leonard Woods, the great American divine "tends to inflame all that is depraved and earthly, and to extinguish all that is spiritual and holy. It is a poison to the soul, as really as to the body." It is a truth, though from the mouth of Mohammed, that alcohol is a "mother of sins."

have become too strong to wait for the social opportunity and social restraint. The drink is taken for its own sake, and secretly. The power of the drag is gone; and the downward movement is precipitate. "There is a difference, no doubt," says Paley, "between convivial intemperance, and that solitary sottishness which waits neither for company nor invitation. But the one, I am afraid, commonly ends in the other; and this last is the basest degradation to which the faculties and dignity of human nature can be reduced."

The *tendency*, as stated by the philosopher, I can from my own observation amply confirm. Many have I seen engulphed, who never dreamt of danger. "Ah, so and so is done for," I have often heard a bon-vivant say; "he has taken to brandy in the forenoon, and when a man does that all is over with him." These same men—quick to see the mote that was in their brother's eye, but blind to the beam in their own—I have seen, after but a short time, clutching their brandy bottle, morning, noon, and night—hopeless drunkards. "Look not thou on the wine when it is red, when it giveth his colour in the cup, when it moveth itself aright. At the last, it biteth like a serpent, and stingeth like an adder."

And this brings us naturally to consider the power of alcohol under another and larger heading.

XV. *The power of alcohol as an instrument of vice.* Of course our present limits prevent anything but the merest sketch of this vast and terrible subject.

That alcohol, in its various forms, is largely used for vicious purposes, or at least with vicious effect, is too well known to all. The reason why, it is not difficult to understand. The first effects of alcohol are pleasurable, and to many minds in all ranks of life intensely so; it is their favourite sensual indulgence; and—assuming a virtue which they have not—they are ready to "compound" for this one sin which they are specially "inclined to," "by damning those they have no mind to." The advanced effects, on the other hand—when moral sense and self-control are gone, and excited animal passion reigns supreme—afford a grosser gratification to "lewd fellows of the baser sort." Besides—and mainly—in both parties there is the evil nature of unrenewed man at the bottom of all the mischief, prompting to self-indulgence and sin; and on every side, all around him, there are special temptations, "thick as leaves in Vallambrosa;" with foolish *custom* varnishing and toning down the whole. Man's evil nature originates and maintains a desire, the gratification of which pleases the grosser sense; the all but universal use of the noxious agent, with the marvellous frequency of the

extension of this to what is base and sinful, gives a cloak of commonness and conventionality; and the result is, that the whisperings of conscience, as well as the teachings of sad experience, are overborne and set at nought. The young are lured on by little and little; all but imperceptibly they wander further and further from the path of temperance and virtue; the quicksands of sensuality lay fast hold of their palsied limbs; the fiend binds them at his will, slowly but securely; and, ere they are aware, they have become the bond slaves of intemperance. This is the consummation of Satan's favourite scheme for thwarting man's redemption. By a lie he does it, as of old he compassed his fall. "It is good for *food* (?), it is pleasant to the eyes, and to be desired to make one wise." "Ye shall not surely die." "Your eyes shall be opened, and ye shall be as gods." It is his masterpiece of villany; he slays both body and soul.

Subdivide, once more, the effects of alcohol, and *its power as a producer of crime* becomes very plain. 1. In moderate dose, the imagination is at once quickened and let loose, the animal propensities are roused, and self-control is impaired. This state obviously disposes to the indulgence of lust, whether of a sensual or covetous kind. It is favourable to uncleanness and theft. 2. In a larger dose the animal is more roused still; reason is perverted, if not actually in-

jured; moral perception and restraint fall low; and, the power of control weakening rapidly, the man is much at the mercy of the worse and baser passions. Hence anger and contention; rioting and revenge; assaults and housebreakings; and all premeditated villany.* 3. Increase still the dose. Then all is more untoward; and the man, beside himself, becomes more and more demoniac, so long as the brain remains in any degree subservient to his sordid sense, or the muscles obedient to his wayward will. Now he is ripe for sudden bloodshed, murder, rape. The tiger is not more savage than the man thus made a monster. Nay, the tiger is the better creature of the two; inasmuch as he follows the instinct of his peculiar nature, and in his savageness seeks but to satisfy a troublesome hunger, in the way which to him seems perfectly legitimate. In the estimate of his fellows, he would be placed in the same category with a man fishing, or making a good bag by means of his gun. For a human being, transformed by drunken debauch into a fiend, we must look for a truer analogue than can

* "When Bishop and his partner," says Sir Benjamin Brodie, "murdered the Italian boy, in order that they might sell his body, it appeared in evidence that they *prepared themselves for the task by a plentiful libation of gin.* The same course is pursued by housebreakers, and others, who engage in desperate criminal undertakings."—*Psychological Researches.*

be found among the beasts of prey. He is, as the law rates him, "voluntarius demon"—by his own act a devil. The deed of violence past, he may scarce remember it; and in one sense he may be said to have ceased to be responsible. But he cannot escape the guilt of having induced, wilfully and wantonly, this brutal change; and, as has been well said by Dr Wilson, in this view drunkenness may be itself regarded as a capital crime.

1. *On the individual*, the effect of vicious alcoholic indulgence is disease of the body, as we have seen. Sooner or later, it must come. Intemperance cannot dwell in a sound frame; at least, it never does. Disease of the mind, too, is not far off. It may be delirium or insanity, temporary or confirmed; or it may stop short of that, resting at senile drivelling, or childish folly. The moral sense is blunted;* and the better part of man sustains both degradation and

* Ultimately, the man becomes a moral idiot. The moral principle is not only lessened, but absolutely extinct—eaten out, as colour is by acid. But two days since, in visiting a young man, well born and of high connections, become a drunkard, with one breath he assured me of his being a man of honour and a gentleman, and with the next told me a deliberate falsehood. To such, indeed, lying, cheating, stealing come quite naturally; they have no perception of either the sin or the shame.

decay. The soul is dying; and, if grace restrain not, will soon be dead—for ever.

One day, at a railway station, where passengers were congregating in groups, before the starting of a train, my attention was attracted to a tall, middle-aged man, who was slowly making his way to lean against a pillar. His dress, evidently once black and reputable, was soiled, and torn, and covered with mud. His limbs were bent and tottering; his hands hung loosely by his side, and shook like aspens. His face was haggard and pale; or rather would have looked so, but for the dirt it bore; unwashed, unshaven; a brown rivulet of snuff massing the upper lip, and trickling down the chin; the eyes fixed, and of a glassy stare, with the eyelids half closed; the jaw dropped, the mouth open, and slavering like an idiot's. His crushed hat was fixed, hard and low, upon his crouching head and shoulders. His shoes were muddy and broken. He might be sixty; he might be forty; all too plainly he was a drunkard, seeking a country home, after wallowing for at least one night in the city's mire. Something told me that he was no stranger: many years must have passed since I had seen him; but in a few minutes memory carried me through all his antecedents. I remembered him a university student, of almost the same age and standing with myself; the gayest of the gay, in heart and

disposition; gentle, loving, kind; studious, too, and talented. I remembered him licensed to preach the gospel; popular, respected, devoted. I remembered him settled down in a country charge; married, the father of a hopeful family, the centre of a loving circle, the pastor of an attached flock. Then came the dark cloud. He had always been of social habits, and he had indulged them; through indulgence the power of drink had crept upon him unawares; and now, with a bound, it took him by the throat, and held him down. I remembered to have heard strange rumours about that manse; there had been surmises, even among his distant friends, of a sad fall there; and news had come one day, like a thunder-clap, of drunkenness, and delirium, and deposition. That was long since, and the sad story had faded greatly from my recollection. But here he stood; a fearful proof and concentration of it all. His body that of a paralysed idiot, at least for the time; his mind sunk to nothingness; his soul—and the souls of his people—what of them? Alas, alas, these shaking helpless hands of his are stained with blood committed to his care—himself a hopeless castaway!

Yes, the power of alcohol, in vice, is terrible. Its bursting is like that of a shell; annihilating the object struck, and in many fragments dealing death and destruction far and near.

2. *On the family.* What does it here? Dirt, disorder, discord are its first fruits. Go through that hamlet, and you may tell off the drunken from the sober by attending merely to their outward estate. That whitewashed window; the ivy, honeysuckle, or woodbine climbing up its side; the well trained rose, or humble daisy, in the garden plot; the door well swept, and the floor all clean; the table shining, and the fire burning bright; the well-filled pot boiling apace, or simmering happily; the bed made smooth, and the tidy coverlet without a wrinkle; the housewife herself trig, and neat, singing and smiling, and busy still with her broom or brush—these are no marks of drunkenness. Look for their counterparts, and you will find it there.

And with it much bitter fruit; crimination and and recrimination; scolding, swearing; woe, and weeping; red eyes, and black eyes; broken heads, and broken characters; cold, and no fire; hunger, and no food; children, but no comforts—lying, straying, stealing; sickness, and no sympathy; debt, and no credit; disease, death, the grave—and no hope beyond.

Poor drunkard!—

> "Your friends avoid you; brutishly transform'd,
> They hardly know you; or if one remains
> To wish you well, he wishes you in heaven.
> Despised, unwept, you fall."

And what brought this dismal brood of evils into the family? The bottle. It came, called, "looked in," as a *friend!* Fathers and mothers! husbands and wives! what think you of a neighbour that, under the pretence of friendship, worms himself into your home, and setting you by the ears breaks your peace for ever; stealing this, and breaking that, leaves your floor and walls bare, your hearth empty; blackening your character, and blasting your self-respect, beggars you; luring you on to perpetration of grossest sin, laughs as he sees you sell your soul for nothing; and not done with you yet, sticks to your offspring, and haunts them through the world as drunkard's brats!

His "power" is terrible; resist it with all your might, and—here is the secret of success—*from the beginning.*

3. *On the community at large.* Taxes and public burdens of all kinds accumulate; penitentiaries and prisons grow full; judges and jailers are overworked; idleness, ignorance, poverty, crime spread like a pestilence; disease doubles its victims, and grave-digging grows a thriving trade; the country is bleeding at every pore, from many an inward wound; and in their own persons her sons and daughters are parting with both the bulk and the bravery of former times.

There is a hale and hearty centre yet, thank God; but it is being sorely pressed and put to. Sober in-

dustry must redouble its labour, that drunken sloth may live and fester.

And worse remains behind. Nations have no hereafter, and their sin meets its guerdon now. A nation of drunkards might well tremble, knowing that "the Lord God Omnipotent reigneth."

XVI. *The power of alcohol to resist and neutralise the gospel.* That such power exists, in great intensity, necessarily follows from what has gone before. The gospel, being the true agent of man's elevation and reform, is opposed bitterly and unceasingly by the Enemy of man. He seeks to thwart it in every way; and in his experience he seems to have found intemperance the most effective of all his hellish antidotes. Look to China. "As shown by Mr Matheson, in his excellent pamphlet—When did opium enter that country? When the gospel came. Men sought to introduce the Bible, and Satan took care that intemperance by opium should accompany it. And where does drunkenness most prevail? In those European countries, generally speaking, where the Bible is most free. Not that Christianity produces drunkenness; not that true Christianity is open to the allegation by the heathen of being synonymous with drunkenness; but because Satan takes care always to accompany the Bible with strong drink, as its antidote, to neutra-

lise its effects.* While the Son of Man, by His Spirit, sows the good seed, Satan comes behind and sows his cruel tares."†

XVII. *The power of alcohol in attaching itself to its victim:* the last, but not the least in our enumeration. The speckled boa winds itself slowly round the hapless antelope, breaks all his bones, beslimes the body with his tongue, and swallows it at leisure. So does alcohol with man. The foolish fellow thinks that he is consuming the whisky; all the while the whisky is consuming him. Or, rather, the seducer is as some fiend, in fairest form of woman, who with blandishment and smile lures on the silly one. "With her much fair speech she causeth him to yield, with the flattering of her lips she forces him. He goeth after her straightway, as an ox goeth to the slaughter, or as a fool to the correction of the stocks; till a dart strikes through his liver; as a bird hasteth to the snare, and knoweth not that it is for his life." Her arms, once around him, will scarce let go their hold. At first she leads him gently, in dance, and gaiety,

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* "Wherever God erects a house of prayer,
The devil always builds a chapel there."
And the devotion he most favours is that at the shrine of the publican.

† Speech in Free General Assembly, 1857.

and enjoyment; their way is among flowers, and green meadows, and pleasant groves; but as they whirl faster on, the sky darkens, the road grows rugged; there are briers and thorns, and dismal swamps, and dreary wastes. Now he is alarmed, and struggles to be free. But all in vain! The hold grows tighter, and the giddy pace still mends. The night is darkening now; and there are strange sounds and gleamings in the air. Other cold hands are on him; and other voices whisper venom in his ears. The yawning gulph is nigh at hand; and another power than man's alone can save him.

CONCLUSION.

Such is our estimate of the place and power of alcohol. I could almost wish that they were false!

Gathering up the points of the imperfect sketch, let us look them in the face. And though, once more, repetitions may offend the fastidious, not a few perhaps may think such reiteration warranted; satisfied that nothing save repeated blows can break this hard crust of custom.*

* I know well enough that there are unseemly, if not unnecessary repetitions in the preceding pages. My apology is, that the whole has been written in patches and portions—not continuously; and I have aimed at practical usefulness in the matter, rather than polish in the manner or style.

Alcohol is a poison; potent and pernicious. To whom are we to give it? The ordinary and legitimate use of poisons, as such, is to destroy life that is noxious. Rats and mice are slaughtered thus, in a useful way, by arsenic; and game-keepers find strychnine very effectual in removing "vermin." But these lower animals are too wise in their day and generation to be caught with alcohol. They repudiate it. Sweeten and disguise it as you may, *they* turn from what *man* at first takes, if not readily, at least willingly, and afterwards comes to devour with greediness. Learning industry from the ant, and providence from the bee, he may from these others take a lesson in dietetics, and be "wise."

Whom shall I poison? Not myself. For there is a mandate that I dare not break—"Do thyself no harm!" Not others—"Thou shalt not kill!"

What shall we do with it, then? Use it, like other poisons, in small quantities, and medicinally.

Alcohol is a medicine; powerful, and often precious. When the exigencies of nature struggling against disease require its help, it does good service under skilful regulation. But, like other strong remedies imported from the poison class, it needs careful watching, both as to the dose and its continuance; and it needs, still more, a judicious estimate of the circumstances which seem to demand its aid. If right in

your diagnosis, you may give the drug freely, yet with care; satisfied that the law of tolerance will bear you safely through. You will tell upon the disease favourably; and you will not hurt the system either now or hereafter. But err in your diagnosis, and be at once lavish and lax in your dosing, then nothing but evil can follow. The disease will be aggravated; and, the law of tolerance becoming adverse, you risk and may ruin the system that you seek to save.

Remember that this medicine, like opium, when given or continued unnecessarily, even in moderate dosing, has a dangerous and seductive tendency to lay hold of the frame; refusing to let it go—inasmuch as it has itself engendered a morbid necessity for the continuance of its use. The skilful practitioner is distinguished from the unskilful, in nothing more than in knowing when to stop as well as when to begin his remedies.

Remember, still more, that alcohol, far beyond any other drug, has an effect on mind and morals: harmless, when the body requires and receives its careful and regulated use; most pernicious when given without necessity and without control.

Let patients beware of two things:—1. How they take this and other strong remedies at their own hands. 2. How they permit themselves to fall into the habit of unnecessarily depending upon the adven-

titious aid of any drug whatever. The stomach is a culinary stew-pan, not a pharmaceutical mortar, far less a laboratory. A system of constant pill-pilling is bad enough, even when the things swallowed are nothing worse than "Frampton's," "Cockle's," "Morrison's," or "Parr's." But if the wilful valetudinarian, tired of simples, comes to a daily dabbling in arsenic, nux vomica, or such like, his state is all the more perilous. The system of "drugging" among members of the medical profession is very much given up; it ought to be wholly abandoned by the laity. Let them beware of giving drugs unnecessarily, to either themselves or others; and to this end let them take some pains to know what the *pros* and *cons* of the commoner medicines are; when they may do good, and when they may or must be hurtful. "My Lady Bountiful often does great harm, unthinkingly. Some one is reputed sick; and instantly a servant is despatched with a bottle of sherry or port wine, with a request to know if brandy is required."* There is a common notion abroad that alcohol is the only true panacea; and that, for the emergency at least, and until more regular aid arrives, there is no casualty, by accident or disease, in which alcoholics in some, or any form, may not be helpful to sustain life.

* Speech in the Free General Assembly, 1857.

This is one of the "vulgar errors" which it is most needful to put down; founded on gross ignorance and fraught with utmost risk.

Let alcohol be limited to its original use. When first brought into the world, in its concentrated form, during the eleventh century—and they were "good old times," in one material sense, that passed without it—it was used exclusively as a medicine. Under the pretentious title of "aqua vitæ," it was doled out by the physician in small and guarded quantities to the sick: and probably, in many cases, was not without its healing virtues. Would that it had continued thus —with some just claim to be esteemed the friend, and not the enemy of life!*

Let men know what it is, and what it can do; let them forbear to seek from it what it cannot give; and let them cease to substitute it for what it is not.

Alcohol is not food. Instinct does not make it so. The child, like the animal, turns from it with disgust. Food satisfies; alcohol breeds thirst, and appetite; it beguiles the stomach into a craving that is unsatiable, till both sense and reason reel; the frame, even when

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* Is "aqua" alcohol?
Yes; "aqua fortis."
"Aqua vitæ" once;
Now "aqua mortis."

saturated, is not satisfied, but like the daughter of the horse-leech still cries, "Give, give!"

It is not food in any sense appreciable to *common* sense. Let it not be used as food. It cannot nourish or give strength; it can only stimulate. It cannot give working power; it can only prolong the expenditure of what you already have; and, further, it hampers and opposes you in getting that store renewed.

It is not food in any sense appreciable to *chemical* sense. Nature can make nothing of it for her organism. It will not digest, or burn, or change in any way. As it came in, so it is put out—impracticable.

It has the faculty to a certain extent, of increasing the sensation of heat, but in an evil way; causing a temporary warmth, by stimulating the nervous and circulatory systems—with great risk of such reaction, however, as shall leave the temperature lower than before.

It is useful as a calorific only on emergency. If I am exposed to great cold, if I have no food, or if I perceive a necessity for speedily raising the temperature of my body before the digestion of food, now taken, can have opportunity to bring *its* calorific power into play—then alcohol may be useful. I use it accordingly; but with no intention of continuance.

When my food has become digested, the need for alcohol is past; and, if taken then, it will do harm. In future, I will try and arrange matters so that the necessity for alcohol, by such emergency, shall not arise. With food and clothing —*put in, and put on, in time*—I am content to meet the intensest cold that alcohol can set its face to.

In a warm climate, alcohol can never be of service, except in purely medicinal use; and even thus the tropical practitioner will find but little occasion for its services. While the man that uses it daily, and freely, as food, is literally with both his hands knocking nails into his coffin.

But there as well as here—though mainly here—people seem firmly set in the belief that alcohol is food, and may with all propriety be used accordingly; setting even such free and easy limits to their "moderation" as admit and imply "occasional" excess. The result is disastrous; in broken healths, broken characters, broken fortunes, and broken souls. Drunkenness is the scourge of our land. And the main secondary cause of its spread most certainly seems to be the false dietetic and domestic place of alcohol. Undo this fatal error; put back this perilous drug whence it came—into the medicine chest and laboratory; and then I believe a master-stroke will have

been achieved in favour of temperance, and all its happy fruits.*

To this end let me adjure you, gentle reader—in the name and in the cause of perishing thousands—not only to give assent to such doctrine as this, but openly and fearlessly to act upon it, forthwith and always.

Those who have grown old in the absurd custom of the time will find a difficulty in suddenly making a change.† Let them at least modify what they may not move. And warned by their own condition of

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* The jolly squire "who ate well, slept well, walked well, felt well—and that was all," told us that he had never taken a dose of medicine in all his life, but once; and that was to oblige a nephew who had set up in the neighbouring town as a druggist. Let men take a lesson from the squire. So long as they keep—and would keep—the evidences of health he mentions, let them avoid physic—of every kind, and more especially of this kind; and if their connections in life render it at any time expedient for them to bestow a little patronage on the alcohol-vender, it is not needful that they should *swallow* the purchase. "I hope you followed my prescription," said a drugging doctor to his patient one morning. "No: certainly not. If I had, I should have broken my neck. I pitched it out of the window." In short, let strong drink be actually what it ought to be—"a *drug* in the market."

† The risk of sudden abstinence, even in advanced life, is mainly imaginary. Cases in proof of this might be largely adduced. Take just one. In "Annals of the Rescued" we find old George Raymond saying: "I left off drink at one stroke, at sixty-eight years of age, after forty years' drunkenness, and I've felt all the better for it in health."

partial enslavement, let them do what they may to deter a following.

Grown men have no such drawback, when yet in the prime and vigour of their days. *Their* systems will have to sustain no dangerous shock; and their strength will be all the better for the shifting.

The young are adjured to consider at once their privilege and responsibility. They have no difficulty in not learning, what others pay hard to unlearn. "Leading" not themselves "into temptation," they may look with confidence to Him who alone can "deliver" them "from evil."

Alcohol is a luxury, in one sense, no doubt. Its first effects are pleasurable; and to some frames intensely so. But its *tendencies*, even in truly "moderate" allowance, are *always* evil. These tendencies may be successfully resisted, and often are, through strength of principle, and manly self-control. But in how many a goodly frame is not the progress steadily onward and downward? And who can tell when the restraint which now hinders may snap in twain? The terrible characteristic of this luxury is its insidious power. With the subserviency of a slave it twines itself around you, obeying all your commands, and ministering in every way to your comfort and happiness—for a time; but feeling its hold secure, it suddenly rebels, and, laying you prostrate, tramples you

in the mire. The rise and revenge of the cruel and cowardly sepoy is not more fiendish than that of your former slave. There is no indignity, no torture of body and mind, to which it may not in hellish ingenuity subject you; ending with that mightiest massacre of all, beyond the power of any mere assassin—destruction of the crushed and broken soul.

Why is it that men will love, and live on, that which they ought above all things else to fear—that to which, in one sense, is given the power, not only to kill the body, but also to cast both body and soul into hell?

Why will men carry and cherish that in their bosom which at the last stingeth like an adder?

No man is safe. I have seen those at whose feet I had been life-long content to sit, to learn both wisdom and piety, drawn gently on, tempted, bound, enslaved; men not long before eminent for worth and goodness, now secret tipplers, or drunkards but ill disguised; once honoured to bear the message of "good news" to many, and now themselves poor "castaways."

This "luxury"—this "something separate" from food—this "dainty"—this thing "delightful to the senses"—is not safe for me—*whatsoever and whosoever I am.* I *may* remain its master; but it may become mine: and if it do, I am lost—or at least in utmost peril. Why should the oak court the embrace of the

ivy, if it know or even fear that the sycophant, as it creeps and clings around, will in the end suck all its sap, and leave it to die a faded, withered thing, fit only as a faggot for the burning?

And why should men, themselves safe—for the time—lead others on by the most powerful of all teaching—namely, example—to dalliance with this drug, when they *see* thousands *so led* perishing miserably, and for ever?

Let honest men but think—opening their intellects as well as their hearts; and surely they will be forced to abstain from what is certainly something more—far more—than a mere "appearance of evil." There is a time for its use. Let its use be limited to that time. All else is abuse; for which there is no time and no tolerance. It is then a positive evil, of the largest and gravest kind.

Let men learn its power, and act wisely on that learning. Let them know and remember that it has vast power as a poison—to be dreaded by all who would live and let live; great power too as a medicine—in small quantities, and skilfully employed; much power as a luxury, but of a most perilous kind; no power as food, or even as food's substitute; no power really and truly to sustain or even refresh a man, under either bodily or mental labour—and let them abolish the term "refreshments" in its ordinary alco-

holic sense, as a most dangerous misnomer; no power to afford continued and systematic protection against extremes of either cold or heat; no power to avert disease, but power almost infinite to produce it; no power to cherish old age, but only to distort and disturb it; no power to prolong life, but power to both hasten and embitter its ending; no power to strengthen the morals or the mind, but power to debase, if not destroy the one, and weaken and pervert the other; a power to produce crime, and minister to vice, beyond what pen can write or tongue can tell—"sensual, devilish."

Let them know such power—and *fear it.*

The proper PLACE *of alcohol for man's use is as a medicine.* Let men put and keep it there. Its power then is both great and good.

Let them regard it no longer as an article of ordinary diet; for food it is not, and power as such it has none.

Let them beware of it as a luxury; for though its power as such be great, it is often grievous. And, looking to the exigencies of the present time, let them resolve, in God's strength and in God's name, to deny themselves what to the man in health is but a doubtful luxury at the best, and is shown by sad experience rather to become "a mockery, a delusion, and a snare." "Wine is a mocker, strong drink is raging; and whosoever is deceived thereby is not wise."

APPENDIX.

The following is a literal translation of the "Resume" and "Conclusions" arrived at by M.M. Lallemand, Perrin, and Duroy, in their recent work, "Du Role de l'Alcool, &c.," so often alluded to in the preceding pages.

The remarks that follow appeared in the last number of the *Scottish Review.*

"RESUME."

"*(a)* Alcohol, taken into the stomach, applied by the skin, or inhaled by the lungs, is absorbed by the veins, and carried by the blood into all the tissues.

(b) The reception of alcohol causes, in animals, an intoxication; which declares itself by a progressive series of functional disorders and alterations, whose intensity is in proportion to the quantity of alcohol absorbed.

(c) It shows itself at first in a general excitement; respiration and circulation are quickened; the temperature of the body is increased; afterwards, respir-

ation and circulation become slower, and the temperature falls.

(d) Muscular power becomes enfeebled and ultimately extinct; the loss commencing always in the posterior extremities.

(e) Insensibility extends gradually from the circumference to the centre.

The sensibility and motive power of the spinal cord and nervous trunks are abolished; mechanical irritation of these parts evokes no sign of either sensation or muscular contraction.

However, the excitability of the nerves and spinal cord still is manifested under the action of electricity.

(f) The respiratory movements cease before the pulsations of the heart; circulation continues after suspension of the other functions: the heart is the *ultimum moriens.*

(g) The time which elapses between the beginning of the intoxication and its termination in death has varied, in our experiments, from forty-five minutes to three hours.

(h) When the dose of alcohol is not sufficient to cause death, the excitability of the spinal cord and the motive power of the nerves reappear after a suspension of variable duration. The sensorial and locomotive functions are not re-established, in their in-

tegrity, till after some considerable time—from fifteen to twenty-four hours.

(i) The arterial blood continues of a bright colour, and retains all its apparent qualities, almost up to the moment of death.

(j) The blood contains, both during life and after death, a great number of free globules of fat, recognisable even with the naked eye.

(k) The anatomical and pathological changes are—an acute inflammation of the gastric mucous membrane; an accumulation of blood in the right cavities of the heart and in the large veins; congestion of the membranes of the brain. The lungs present no notable congestion.

(l) All the fluids and all the solids contain alcohol, which is easily reproduced by distillation; or by estimation, according to the method of volumes.

(m) Alcohol accumulates in the liver, and in the cerebro-spinal nervous mass. The proportional distribution of the alcohol in the principal parts of the organism is represented in some measure, according to our observations, by the following figures:—

In the blood,.....1
In the cerebral substance,.....1·34
In the substance of the liver,.....1·48

The muscular, cellular, and other tissues, retain a pro-

portion of alcohol very inferior to that which is found in the blood.

(n) Alcohol diluted, and injected into the veins, produces the same phenomena as alcohol taken into the stomach; but they succeed each other more rapidly, and the animal succumbs in less than twenty minutes.

(o) Alcohol injected into the veins spreads itself over all the tissues, but accumulates in the brain in a considerably larger proportion than in the liver, contrary to what takes place when it is administered by the stomach. This altered proportion is indicated by the following figures:—

In the blood,.....1
In the substance of the brain,...3
In the liver,.....1·75

(p) Death by alcoholic intoxication is due primarily to the special action which the alcohol exerts upon the cerebro-spinal nervous system.

(q) After the reception of a feeble dose of alcohol —say twenty or thirty grammes of brandy—the blood, during several hours, contains alcohol, the presence of which can be demonstrated by tests.

(r) During life, and after death, we do not find, either in the blood or in the tissues, any of the oxygenated derivatives of alcohol—such as aldehyde, acetic acid, &c.

(s) The stomach, and the stomach only, contains a small quantity of acetic acid, formed at the expense of the ingested alcohol, by the action of the gastric juice which operates in this case as a ferment.

(t) The alcohol is rejected from the economy by different sources of elimination—by the lungs, by the skin, and by the kidneys. It is easy to recover the alcohol, in notable quantity, by distillation of the urine.

(u) These sources of elimination reject the alcohol, not only after the ingestion of a considerable quantity of this substance, but even after the ingestion of very small doses of alcoholic liquors.

(v) The elimination of the alcohol continues during several hours, even after very moderate ingestion. The elimination is continued by the kidneys for a longer time than by the skin and lungs.

(x) Aldehyde introduced into the stomach is absorbed by, and found in the blood; there is found there at the same time some acetic acid, due to the transformation of a portion of the aldehyde. But the aldehyde does not give place to the production of oxalic acid.

(y) Aldehyde, introduced into the stomach, is eliminated partially by the kidneys and by the lungs.

After the ingestion of alcohol, aldehyde is not found either in the urine or in the products of the pulmonary exhalation.

(z) Alcohol has the same action, and produces the same effects in man as in the lower animals.

—o—

CONCLUSIONS.

1. Alcohol is not food.

2. Alcohol exerts a special influence on the nervous system. It acts, in a feeble dose, as an excitant, in a large dose as a stupefiant.

3. Alcohol is neither transformed (into aldehyde, acetic acid, or oxalic acid, its derivatives), nor destroyed (by conversion into carbonic acid and water) in the organism.

4. Alcohol accumulates, by a kind of elective affinity, in the brain and in the liver.

5. Alcohol is eliminated completely from the organism, and as alcohol. The organs of elimination are the lungs, the skin, and especially the kidneys.

6. Alcohol has a material and direct pathogenic influence on the development of many functional disorders and organic changes in the brain, the liver, and the kidneys.

7. Spirituous drinks owe their common properties, and the specialty of their effects to the alcohol which they contain.

The moderate use of simple fermented drinks is generally useful, and not attended with any inconvenience.

The use of fermented and distilled liquors is often hurtful; should always be very much restricted; and ought never to be tolerated, except under exceptional circumstances."

Such are the pregnant "conclusions" drawn from experiments and observations patiently conducted during the space of two years; all the more valuable, because not adopted in support of any foregone conclusion, but undertaken, almost accidentally, in connection with an arranged inquiry into the action of anesthetics.

There is a dead fly in the ointment, however. The first deduction from the 7th "conclusion" is at variance with Nephalism; and, what is more to the purpose at present, it is inconsistent with logical deduction from their own well-arranged and ascertained facts.

They assert that "the moderate use of simple fermented drinks is generally useful, and not attended with any inconvenience." Now, we do not stop to take up the old discussion as to the difficulties and dangers of the word "moderate," but prefer to put the question plump—How can this be? In your 6th "conclusion," you state that alcohol has a direct and

material power of producing many functional disorders and organic diseases of the brain, liver, and kidneys. In your 7th you state that spirituous drinks (previously letting us know, p. 128, that under that general term you comprehend "wine, cider, beer, brandy," &c.) owe their common properties and special effects *to the alcohol which they contain.* How is it possible, then, that the use of any of these things, to any appreciable extent, can be generally useful or free from inconvenience—in the true sense of these terms—*i. e.*, conducive to health, and free from the risk of inducing functional disorder or organic disease?

The only apparent explanation is, that our authors intend another meaning for their words: "generally useful" probably implying—useful for the purposes of social comfort and enjoyment; "not attended with inconvenience" intended to apply only to the subjective sensations of the individuals for the time. And the likelihood of this is strengthened very much by turning back a few pages in their book, where we find the following:—"'Fermented and distilled liquors,' says Royer-Collard, 'are never necessary for any purpose, except for certain individuals in whom habit has created a need for them—truly morbid; and then we may regard these drinks as therapeutic rather than hygienic agents.' Michael Levy, in signifying his approbation of these words of Royer-Collard, makes,

however, the subjoined wise reservation:—'It does not follow that a healthy man is to abstain entirely from these liquors. Hygiene cannot abstract anything from the social state in which we live, and which creates for us certain conditions of regimen to which she (Hygiene) ought to bend the rigour of her else absolute laws; and seeing that it is difficult on every occasion to avoid alcoholic stimulation, wisdom desires that we dispose our organs for it, so that an agent, which is not necessarily hurtful, may not become to them, even in minute doses, a cause of disorder and disease.'" (Pp. 218, 219.)

So sane men are to bow to the laws, not of hygiene, but of society—the social overriding the hygienic; and healthy men are, on social grounds, purposely to practise a habit whereby their bodies shall possess that morbid need to which alcoholic drinks may be subsequently applied, in a therapeutic sense, with a hope of consequent immunity from hurt and inconvenience! Otherwise, *unless that morbid state be induced, these alcoholics, "even in minute doses," will become "a cause of disorder and disease!"*

Verily the deceased fly is of large dimensions, and very putrid withal!

In another page (215) the plague-spot comes still more plainly out. "Man," according to the energetic expression of Broussais, "has need of being stimu-

lated in order to feel that he is alive. Whatever may be the social position he occupies, he seeks the spur of a moral or physical excitement, to resist the influences which weigh him down, to rouse his activity, or simply to procure his enjoyments." And so he takes to alcohol!

This may do very well in France. *There* men may need the *aiguillon* to make them sensible of existence, to rouse their action, and to purchase their pleasures. But what a slur is this on the proverbial "vivacity" of "la belle France," on the natural and inherent prowess of "la grande nation," on the enjoyments—now confessed all fleeting, fictitious, and delusive—of the people whose time seems mainly given up to the purchase and pursuit of pleasure! Is all contained in this—"Vive le plaisir! vive la bagatelle?"

On this side of the Channel we hope for the possession of a more sober mind, and the realization of a more veritable humanity; no need for the sharp prick of the alcoholic goad to assure us of existence; our action depending on no other stimulus than the force of circumstance and the call of duty; our enjoyments not of sensual origin and dependence, but higher and more secure in their source—real, substantial, and with no sinister reaction. Observant of the laws of health, we refuse to become slaves to the customs and caprices of society; and we

decline the privilege of making ourselves sick for the pleasure of therapeutic titillation and anæsthesia.

At p. 217, another attempt is made to support the deduction to which we have taken exception. "Simple fermented drinks—beer, cider, and especially wine—enter with advantage into the habitual regimen of the healthy man: The alcohol is then diluted with a large quantity of water, and united to substances which enfeeble its action, and render this less immediate upon the organs. These drinks, by a light and agreeable stimulation, facilitate digestion, and excite the other functions to a healthful activity. The azotised and non-azotised matter which they contain (in addition to the alcohol) furnish nutritive principles perfectly digestible," &c. To this we reply, by referring to "conclusion" No. 6, which testifies so strongly to alcohol's disease-creating power; reminding our authors that these "simple fermented drinks," according to their own showing, depend for their stimulant power solely on the alcohol they contain, and whose "special effect" is not destroyed by its large dilution, but only rendered less strong and less immediate. And as to the "nutrient principles" to which these drinks—more especially the true wines—are united—and by virtue of which (not of the alcohol) benefit may seem to accrue to the stomach and its digestive function—let these be made available, "purs et

simples," by excluding the alcohol—as Nephalists wisely propose to do, in unfermented libations.

We claim our French friends, then, as wholly on our side, and that in spite of themselves. Their exceptional clause turns out an error—the social perverting the scientific—which we humbly hope is hereby corrected. And so far from the "conclusions" being weakened by that exception, we regard it—consistently with the character of its class—as strongly confirming the truth and value of the general rule—" L' alcool n' est pas un aliment.'

—o—

The results of the French philosophers are supported by observations of others in our own country. Dr Edward Smith has repeated the experiments with precisely similar results; and, besides, has instituted a series of observations of a personal kind, as to the sensations and effects produced by the ingestion of alcohol. The sum of these we transcribe from the *Lancet* for January 26th, 1861 :—

"In a prolonged inquiry upon myself and another, we took the alcohols in *moderate* quantity, duly diluted, on an empty stomach, in the morning, and during rest; and we also noticed most carefully the general effects, and the moment of their occurrence.

"*(a)* In from two to eight minutes a sensation of fulness at the crown and the back of the head, or at the temples, according to the kind of

spirit taken. This was due, doubtless, in great part, to the increased force of the heart.

"*(b)* In from three to seven minutes the mind was disturbed. Consciousness, the power of fixing the attention, the perception of light, and, we believe, of sound also, were lessened; the power of directing and co-ordinating the muscles was also lessened, whilst there was a very marked, peculiar, continuous purring or thrilling, and not unpleasant sensation, passing from above downwards, through the whole system. This latter symptom was the most pronounced in from fifteen to forty minutes, and continued, without much variation, during twenty to thirty minutes. After this period the whole effect recorded under this head diminished, and oftentimes suddenly, as was shown by the increased perception of light, as if a veil had fallen from the eyes, and by increased consciousness; but nevertheless the last power to be *completely* regained, was consciousness.

"*(c)* The increase in the action of the heart set in so soon as three minutes, and continued from thirty to fifty minutes.

"*(d)* Coincident with this increase was a sense of dryness, heat, and evident fulness or swelling of the exposed parts of the skin, as the hands and face, and, also, a general sensation of heat. This was due to the increased supply of blood to the surface, and the lessened refrigeration of the skin. This increased for a time, and so much so, that, with rum especially, the skin was as harsh and dry as when exposed to an easterly wind. After about twenty to forty minutes, this sensation of heat gave place to one of cold, which was first felt on the most sensitive part of the body in reference to temperature—viz., between the shoulders, and at length, notwithstanding the existence of a suitable degree of atmospheric temperature, it became distressing, and led even to shivering. This was sometimes so marked, and occurred so suddenly, that it gave rise to a shock. It did not correspond with the temperature of the skin, but it was usually co-existent with the cessation of the increase of the heart's action.

"*(e)* The muscular system was influenced in a marked and definite manner. The action on the involuntary muscular fibres of the heart has already been mentioned. The thin layers of voluntary muscles found about the body showed great relaxation. The respiratory muscles acted in a gasping manner, so that there was a pumping and quick inspiratory effort in the earlier, and a lazy feeble expiratory effort in the latter stage. At all periods there was a sense of impediment to respiration. The muscles of the limbs were inactive. There was relaxation of the muscles, and stiffness of the skin of the face, forehead, and upper lip, so that the features fell. This state of the muscular system followed the commencement of the effect upon the consciousness, and other functions of the brain, and, also, the excited state of the heart. In reference to its cessation, the power of co-ordinating the muscles was first regained, whilst the buzzing sensation and semi-cataleptic state continued, and the disposition to use the muscles was regained the last of all. There is so close a connexion between the nervous and the muscular systems, and complete consciousness is so essential in inquiries of this kind, that it is not easy to isolate the effect upon the muscles; but close attention to all the phenomena, the care taken to note them down at the moment of their occurrence, and the long series of experiments which we have made, assure us that muscular tone and power are greatly lessened; that the effect is not identical upon voluntary and involuntary muscles, and that it is even not identical upon the inspiratory and expiratory set of muscles.

"*(f)* The effect upon the mind was also very marked and peculiar, and would have been a valuable study to a psychologist in search of facts. Rum and some other spirits made us very hilarious and talkative in about ten minutes, and during about twenty to twenty-five minutes; so much so, that my friend was altogether a king; but as minutes flew away, so did our joyousness, and little by little we lessened our garrulity, and felt less happy, until at length, having gone down by degrees, we became silent, almost morose, and extremely miserable. Then, indeed,

we felt the horrors and the sorrows of the drunkard's lot, and saw, with a clearness which can only be perceived by such experience, how certain it is that he must again drain the intoxicating cup. Never were the extremes of happiness and misery brought so vividly before us, or seemed to be in such close proximity, as on those occasions, and never did we so deeply commiserate the slavish, miserable, and almost hopeless condition of the poor wretch who has become a victim to this fearful vice.

"In addition to the above, we may mention that every mental perception was darkened, and that the dreaminess, which is not an unpleasant feature of it, is a condition in which neither thought nor imagination acquires power. We suspect very greatly the statements of those who profess that fancy is then on her most airy wing, or that thoughts spring forth without the efforts of parturition, and our most charitable reply to such statements would be, that it is all a dream.

"*(g)* The effect upon the secretions was very marked, and, in addition to its varying effect upon the urine, it is certain that the secretion of the salivary glands and of the mucous membranes, was lessened, as was shown by the dry state of the mouth, and by the sore and dry condition of the tip of the tongue, which was so often present when rum was taken."

So then, alcohol, besides being absolutely unavailable as food, is, when taken as something additional to food, at all times perilous, and often most hurtful. It hurries the circulation; it both disturbs and disorders the functions of the brain, the mind suffering loss in its larger and better part; the skin is made dry and hot, and hindered in its special work; the muscular system loses both power and co-ordination; the secretions, and many of the excretions, are dis-

ordered and impaired. Certes, this can be no safe luxury!

What *can* it do, then, in the way of supposed good? What possible plea can be set up in favour of even its "moderate" and restricted use, in conformity with the social usages of the day? Its aiders and abettors have but a small space of scientific ground left—boggy and uncertain, too, as we shall see—whereon to make a final and desperate stand. "It restrains the waste of tissue."

Dr Hammond, an American physician,* is the authority most generally quoted in support of this plea: but even his experiments are by no means conclusive on the subject. As Dr Smith has shown, there is more than a suspicion of fallacy lurking within them. The man (he experimented on himself) was not in health. "While these experiments were progressing," says he, "the healthy action of my system was much disordered. Headache was constant, sleep was disturbed, the skin was hot, pulse full and bounding, averaging 98 per minute; and there was on two occasions, after eating, slight palpitation of the heart. My appetite was capricious; sometimes disgust was created by the mere sight of food, at other times I ate with a good deal of relish. I

* *American Journal of the Medical Sciences*, October, 1856.

think I should have been seriously ill if I had continued the investigation longer." Fortunately, relief came in the form of a "diarrhœa of considerable violence, which commenced on the second day after the conclusion of these experiments, and continued 48 hours." No wonder he ate less food, seeing he was sick sometimes even to loathing. No wonder he passed less urea, seeing that, with an impaired digestion, there was diminished transformation of food. No wonder he gained some weight, with a hot skin, innocent of perspiration, and with an accumulation of solid matter in the bowels, relieved only by a diarrhœa of considerable violence, enduring for 48 hours!

Further, even supposing (what is by no means proved) that alcohol has the power of restraining waste, a very pertinent question immediately emerges —Is that desirable? On this point, Dr Smith has well observed—"It is assumed that by lessening the waste the system gains, and that the gain is an advantage. But health means a due balance between want and supply, and if you lessen the waste, you should at the same time lessen the supply, or you will have the evils of excess; and if you lessen both the waste and the supply, it follows that you have lowered the vital actions below that amount which constitutes health. There must be a certain fixed amount of vital action to maintain life, and there is always a

further variable quantity to enable us to fulfil the active duties of life. To save waste, therefore, in health, and with due supply, is to induce disease."

Some may argue that the progress of civilization has brought life to such an artificial pitch in the present day that the maintenance of work—more especially head-work—in the degree and duration required for success, or for even bare fulfilment of duty, implies such an amount of continuous tear and wear as, if unchecked and uncompensated by alcohol, or such like means, would speedily terminate in premature decay and dissolution. To that we would answer:—1. Such an idea implies something like a doubt of the Creator's wisdom and beneficence in designing a creature fitted but imperfectly for the higher reaches of functional activity. And in connection with this we are reminded very forcibly of a statement we once heard made by a free-thinking disputant, in the course of an argument on the validity of the Decalogue—"What do you call the moral law?" said he. "The ten commandments." "The ten commandments! Is that all? Then I can only say that they are a poor set. All very well for the early state of the world. Quite suitable, no doubt, for the Jews in their imperfect and barbarous development as a people, but quite unsuited for the advanced require-

ments of the present day." Now, just as we believe that the moral law promulgated from Sinai, is broad, and long, and high, and deep enough for all time, so we believe that man's organism has been so contrived and arranged, from the primeval model down to the present generation, as to be duly capable of all ordinary and legitimate function, without the necessitated intervention of alcoholic or any other like adventitious aid. 2. Exceptional cases—cases of emergency—alone warrant the use of such "arresters of waste." If Providence plainly say—"This work must be done, at all hazards, within a given time"—then do it at whatever cost, and make use of such arresters of waste as may be within your reach, with the view of modifying that cost as far as may be. The result may be disastrous; but your fate will at least partake somewhat of the dignity of martyrdom. If, however, there be no such necessity in Providence, and the crisis is wholly self-imposed, then your fate, if calamitous, is not that of martyrdom, but of suicide. 3. Practical Nephalism disproves the allegation. More work, both of brain and muscle—prolonged, energetic, and successful work—is done under the plain water-power alone than with the deceitful aid of alcohol. Other things being equal, *it has been proved* by facts, that the Nephalist will both do more work, and better work, and live longer under it, than either the moder-

ate or the immoderate employer of the boasted "arrester of waste."

And so it comes to this; for we, too, have our "conclusions":—

1. Alcohol is not food, in any sense of the term.

2. If used as such, it tends to generate disease—more or less—especially in certain organs, the brain, liver, and kidneys.

3. It is not *proved* to be an "arrester of waste."

4. And, if it were, the benefit of its use as such were more than doubtful.

5. Science still stigmatizes it as a poison and a drug, and shuts it up, in its proper place, for the use of man, on the shelves of the materia medica.

6. A large portion of society, notwithstanding, still persists in using it as a luxury—often counting it, indeed, as almost a necessary of life—with what cumulative injury resulting, let the statistics of poverty, crime, and disease declare.

7. The wise man, estimating alcohol at its real worth, refuses to be "deceived thereby."

INDEX.

Abstinence, "a fair trial," 148.
Alcohol, a cause of heart diseases, 36.
..... adds no vital strength, 61.
..... a diuretic, 54.
..... affects the nervous centres, 23.
..... a luxury, 91, 116, 208.
..... a medicine, 45, 201, 211.
..... a narcotic, 46.
..... and "Bright's disease," 42.
..... and chloroform, 100.
..... and colic, or cramp, 57, 111, 112.
..... and congestive apoplexy, 25.
..... and disintegration of tissue, 61.
..... and endurance of cold, 151.
..... and gastric juice, 69.
..... and horse-radish, 84.
..... and less food, 78.
..... and mental labour, 137.
..... and mortification, 91.
..... and nervous depression, 62.
..... and shaving, 84.
..... and the aged, 56.
..... and the breath, 25.
..... and the kidneys, 41, 111.
..... and the liver, 38, 41.
..... and the mind, 31.
..... and the skin, 42.
..... and the stomach, 38.
..... and voluntary control, 138.
..... an "inferior article," 154.
..... an instrument of vice, 190.
..... a poison, 22.
Alcohol, as a calorific, 71, 205.
..... as a cooling-agent, 161.
..... as a condiment, 82, 115.
..... a solvent, 70.
..... as a spur, 60.
..... at once absorbed, 23.
..... averting disease, 171.
..... Christison on, 28.
..... coagulates pepsin, 69.
Alcoholics contain little nutritive material, 20.
Alcohol, converted into acetic acid, 71, n.
..... corrupts the blood, 35.
..... Dr Percy's experiments, 24.
..... does not nourish or repair tissue, 70, 114, 124.
..... does not sustain, 122.
..... effects on the mind, 186.
..... Headland on, 46.
..... in accidents, 110.
..... in dropsies, 53.
..... in dyspeptics, 112.
..... in emergencies, 136.
..... in exhaustion, 124.
..... in fevers, 48.
..... in heart-disease, 53, 111.
..... in inflammations, 54.
..... in its gradual effects, 25.
..... injures the brain, 36.
..... in shock, 47, 110.
..... in small doses, 44.
..... on the community, 197.
..... in the family, 196.
Alcoholismus-Chronicus, 30.
Alcohol, its power, 107.

Alcohol, for children, 183.
..... goes to the blood at once, 13.
..... must be diluted, 23.
..... no antidote known, 23.
..... no panacea, 161.
..... not food, 68, 113, 204.
..... no true tonic, 63.
..... place of, 19.
..... producing disease, 178.
..... prolonging life, 184.
..... rapidity of action, 24.
..... requires nice handling as medicine, 110.
..... rules for medicinal use, 64, 202.
..... shock and coma, 26.
..... shortens life, 185.
..... uses for preserving, 37.
..... *versus* the gospel, 198.
..... warms by nerve-stimulus, 155.
..... what included under the term, 19.
..... what is it? 21.
..... "worked off," 40.
Assurance offices, 185.
Barometer, should be steady, 156.
Basham (Dr.) on A. and gastric juice, 69.
Beer and brandy, both alcoholic, 20.
..... Liebig on Bavarian, 20, n.
Bishop, the murderer, 192, n.
"Bitters," 174.
Blue Mountain Peak, ascent of, 168.
Bocker (Dr.) on water and alcohol, 70, n.
Brandy and salmon, 84.
Brewster, Judge, testimony of, 187, n.
"Bright's disease," Christison on, 42.
"Bright's Disease" often caused by alcohol, 42.
Burns and drink, 140.
Carpenter (Dr.) on physiology and temperance, 10.
Cholera-hospital experience, 172.
Clothing and food, *versus* alcohol, 157, 206.
Coal-whipper's experience, 136, n.
Cobden, Richard, testimony, 149.
Coffee, tea, and cocoa, 130, 133.
Consuming and consumed, 199.
Consumption unknown in Africa, 179.
Cordials and restoratives, 129.
Craigie (Dr.) testimony of, 173.
Customs, to be changed, 9,
Davidson (Dr.) testimony of, 173.
Dance of death, 199.
Dangerous as a luxury, alcohol, 209.
Delirium Ebriosum, 31.
Delirium tremens, 31.
Delirium tremens, a cure, 32.
Delirium tremens, Dr. Basham on, 39.
Drunkard pays, but has no discharge, 29.
Drunkards the first victims, 172.
Drunkard, *Voluntarius Demon*, 28.
Drunkenness, many causes, 9.
Europeans in India—their "small breakfast," 175, n.
Fatigue masked, 145.
Fat, in the blood and tissues, 89.
..... not prime, 87.
Feeding-power tested, 85.
Fever-hospital experience, 172.
Flowers in close room, 104.
Food, effects of deficiency or superabundance, 15.
Force and food, 75.
Fowler, the Dorsetshire, 159.
Gamblers and alcohol, 138.
Genius and drink, 143.
Gout, a teacher, 146.
Governor of Gambia, testimony of, 166.
Grimaldi and Abernethy, 100.
Guacho of South America, 132.
Hall, Dr Marshall, on tobacco, 94.
Hammond, experiments by Dr., 128.
Hard-headed fellow, 37, n.
Havelock, testimony of, 170.
Head, Sir Francis, experience of, 132.
Highland minister's testimony, 149.

Hitchcock (Dr.), testimony of, 187, n.
Homœopathy, success of, 135.
Hot-exposures, conduct under, 163.
Howie (Dr.), testimony on idiocy, 179, n.
Hudson's Bay Company, 160.
Idiocy and alcohol, 179, n.
Intellectual perversion, 116.
Intoxication described, 27.
Jackson (Dr.), testimony of, 166.
Johnson, Samuel, and drink, 144.
Kine, all ill-favoured, 88.
Lallemand, &c., *versus* Liebig, 75.
Lallemand, Perrin, and Duroy, experiments of, 39, Appendix, 212, *et seq.*
Lead and alcohol, in small doses, 30.
Liebig and combustibles, 152.
Liebig on heat-power of A., 71.
"Like his meat," 86.
Little (Dr.), on use of opium, 98.
Livingston (Dr.), testimony of, 169.
Lungs, work of, 14,
Luxury, what is it? 92.
Matheson, Mr D., on use of opium, 98.
Medicinal power of alcohol, 109.
Miller, Hugh, and drink, 140.
Miller, Samuel, D.D., and drink, 142.
Mohammed and the "mother of sins," 188, n.
Mondayishness, 150.
North, Christopher, on the dram-drinker, 187, n.
Oil and fat, as calorifics,
Oinomania, 33.
..... a "sad case," 34.
Old age, 180.
"Old man's milk," 180.
Opium, as a luxury, 97.
....., clerical use of, 98.
Opium-eaters, 99.
Opium-eating, 68
Paley on intemperance, 189.
"Physic to the dogs," 207, n.
"Ploy and reckoning," 117.
Poisons, action of, 17.
Poison-power of alcohol, 108, 201.
Pony and mulled ale, 58.
Poverty forgotten, 120.
Prize-fighter's training, 80, 125.
Rae (Dr.), testimony of, 160.
Rajah of Sarawak, testimony of, 165.
Reaction produced, 117.
"Refreshments," 126.
Respiratory materials, and life, 81.
Rest preferable, 63, 122, 143.
Richardson, Sir John, testimony of, 160.
Row, Sir John, testimony of, 166.
Royer-Collard on fermented and distilled liquors, 66.
Russians and Laplanders, 158.
St. Martin's stomach, 65.
Satan's chloroform, 121, text and note.
Scripture wrested, 120.
Servant—companion—tyrant, 95.
Smith, Sydney, and drink, 141.
Spirit-lamp *versus* oil-lamp, 153.
Spontaneous combustion, 89.
Spur, unwise use of alcohol, 60, 123.
"Stock-taking," a case, 145.
Stokes (Dr.), testimony of, 91.
Sudden abstinence, 207, n.
..... deaths, 146.
Tartar emetic, or alcohol, 80.
Tea and coffee, Headland on, 134, n.
Tendency of use of alcohol, 102, 189.
"The early worm," 176.
The moral idiot, 193.
Thompson, Dr. Dundas, on alcohol and gastric juice, 69.
Tiger-men, 192.
Timothy a water-drinker, 112.
Tobacco, as a luxury, 93.
Tobacco-patients, 96.
Tobacco-slave, 95.
Tobacco, use hurtful, 93.
Tolerance, law of, 5

Todd and Bowman on alcohol and pepsin, 69.
"Unbidden guest," 154.
Vicar of Plymouth, testimony, 149.
Victim, a clerical, 194.
"Victuallers," 127.
Waste and renewal of tissues, conditions of, 11.
Waste retarded by alcohol, 127.
Water and heat, 165.
..... and milk, 133.
"Water-cure," success of, 70.
"Westminster Review" on food-question, 91.
Whip, what use, 125.
Wilson, Dr. Charles, on Pathology of drunkenness, 10.
Wood, Dr. Leonard, testimony of, 188, n.
Workman's morning cup, recipe, 176.

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